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ABSTRACT

The marked decline in international interest in promoting adult literacy that has occurred over the last decade has had serious consequences for literacy education in third world countries. In general, planning and implementation of literacy instruction in these areas has neither improved nor adapted itself to changing circumstances. While the functional literacy approach has been useful to educational planners in developing nations, the approach has not been without its shortcomings. A more effective approach for use in developing nations is the specific literacy approach. Before undertaking any literacy activity, practitioners using the specific literacy approach first complete a set of preliminary exercises to help them understand the relationship of literacy to a particular situation and to determine whether a given literacy activity is appropriate and feasible in that situation. A good example of such a preliminary planning activity is the 12-step planning sequence used by the Experimental World Literacy Program. When this planning model was applied in a series of case studies in The Gambia, planners were able to analyze the specific literacy requirements of various groups of people as well as their abilities and the circumventions that they used to overcome their literacy needs. The application of this model provides planners with a useful starting point from which to assess the feasibility of specific interventions. (MN)

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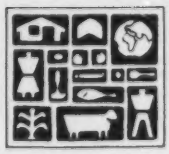
MAKING LITERACY WORK:

The Specific Literacy Approach

by
Stephen J. Anzalone
and
Stephen D. McLaughlin



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THE CHANGING ENVIRONMENT FOR LITERACY

During the past decade, adult literacy in international development has become out of fashion. A marked decline in international interest in promoting adult literacy has followed the disappointing results of the Experimental World Literacy Programme (UNESCO, 1976). Many development planners now question the need for literacy in settings where printed materials are few. Others look with dismay at the seemingly meager accomplishments of traditional literacy projects--high dropout rates, low levels of skill acquisition, and frequent instances of relapsing into illiteracy after training is completed.

Lack of interest on the part of technical assistance agencies and among planners and educators has meant three things. First, there has been a failure to examine the nature and consequences of illiteracy in the wake of rapid change in developing countries. Second, there has been a lack of appreciation of the extent to which illiteracy is being addressed in development activities in sectors other than education. Finally, planning and carrying out literacy instruction, in general, has neither improved nor adapted itself to changing circumstances.

This note considers these issues with respect to the planning of literacy programs in specific situations. The focus is on literacy training for specific needs brought about by rapid change in Third World regions. In such situations, training is planned around activites which do not primarily, or even secondarily, promote adult literacy. Rather, training focuses on content areas related to development which demand specific literacy skills. Examples of the need for "specific literacy" are drawn from the following observations made in The Gambia:

1. The Farmer and Changing Technology. Farmers in The Gambia, like farmers elsewhere, depend on pesticides to control crop diseases. Extension workers advise them about appropriate quantities to be used. Illiterate farmers must rely on their abilities to remember oral instructions, and often, to avoid confusing these with instructions for such things as amounts of fertilizers or human nutrition supplements, In this situation, failure to remember

correct quantities of pesticides can have, and reportedly is having, serious or even fatal consequences.

2. The Farmer and Cash Crops. In developing countries, relations between illiterates and literates are often founded upon suspicion and mistrust. In The Gambia, as elsewhere, many farmers believe that they are cheated at cooperative weighing stations. As farmers produce less for subsistence and more for the market, they become increasingly involved in the "literate" aspects of trading. Number recognition and the ability to perform arithmetic calculations become increasingly important to reduce actual instances of cheating and illiterates' general mistrust of literate traders, cooperative officers and development agents.

3. The Informal Sector and Modern Commercial Practice.[1] The producers and traders who operate small enterprises in The Gambia's urban informal sector are increasingly relying on savings and checking accounts. This multiplies possibilities for, and actual instances of, cheating. Even if cheating does not occur, illiterate business operators remain dependent on literacy and numeracy skills of others. Moreover, inability to use banking services and to keep financial records prevents many illiterates from taking advantage of available credit and business advisory services. The illiterate small entrepreneur is at a serious disadvantage in performing basic functions for inventory control, product costing, and financial planning that are essential to sound business operation. This is not only true in The Gamiba. AID's study "The Development of African Private Enterprise" maintains that the evidence from a number of countries shows a positive correlation of literacy and numeracy with business success.

4. The Technical Trades and Growing Complexity. Development in The Gambia is bringing with it new forms of economic activity and new demands for technical skills to operate the economy. The Gambia imports a growing diversity of new products and new models of existing products. These products often involve complicated technologies and require nontraditional repair procedures. The great

---

[1] The informal or traditional sector is that part of the economy with "low productivity, very low wages, pretty well unorganized, encompassing a very broad spectrum of activities from the shoeshine boy, construction laborer, street pedlar and artisan to the head of a small workshop employing a handful of workers" (Hallak and Caillods, 1981, p. 14).

> distance between The Gambia and the manufacturers of these products makes reliance on operating or repair manuals absolutely essential in many cases. At the same time, the illiterate's ways of circumventing repair manuals and other technical materials are becoming increasingly inadequate. Moreover, the growing complexity of technical work in The Gambia together with the increased supply of literate and semi-literate job seekers leaving Gambian schools are allowing the modern sector to erect--through entry level requirements, trade tests, and job upgrading--literacy requirements for jobs where none existed previously. Illiterates, even those with a good deal of technical aptitude, will find difficulty entering into employment or advancing within the technical trades.

These examples show how the consequences of illiteracy have taken on new significance as a result of changes occurring through the process of development in The Gambia. Similar examples could be drawn from other developing countries, where the velocity and intensity of change is perhaps greater than in The Gambia. The tempo of change and its cumulative effects during the past two decades have contributed to shaping what may be called a new environment and, perhaps, new imperative for literacy.

One aspect of the new environment for literacy concerns urbanization. In the past, literacy activities usually took place in traditional settings where the need for literacy was often not urgently felt and where there were few opportunities or materials for practicing and maintaining skills. This situation is steadily changing in the face of continuing urban migration in most developing countries. In 1975, one-fifth of the world's population lived in the cities of the Third World. By the year 2000, one-third of the world's population will live in the Third World metropolises. An urban environment makes new demands on the illiterate. There is often strong incentive to learn a new language. The illiterate interacts with more people who are literate, and there are more daily activities that require literacy.

Another aspect of the new environment for literacy is the change underway in rural areas. Rural areas in The Gambia, like those in many other countries, are becoming less isolated. There is a growing contact with activities and products of the modern sector, which affect both agricultural production

and daily life. The pace of this change is likely to quicken as the effects of recent developments in telecommunications begin to accumulate.

A third aspect of literacy's new environment concerns people. The tremendous growth of primary education during the last twenty years in all regions of the developing world has greatly increased the number of literates and semi-literates in developing countries. The changing composition of literates and illiterates in the populations of countries will increase the disadvantage of the illiterate in many aspects of economic and social life. At the same time, literacy programs will become increasingly concerned with enhancing literacy skills of young adults who have already received some education.

Besides reflecting the new environment for literacy, the examples given above show how illiteracy is being encountered within the context of different development situations. In each case illiteracy emerged as a constraint to performance of some development task or to a person's capacity to benefit from available training. Illiteracy presented itself in connection with ongoing activities of cooperatives, agricultural extension, business advisory services, and technical trades. It did not arise as the result of a person or agency with a professional orientation toward adult literacy attempting to find a suitable development context for a literacy program.

The changing environment for adult literacy, the fact that literacy is being increasingly addressed in the context of specific situations, and the generally frozen nature of the literacy effort have prompted this present note and the rationale for the approach being advanced. In trying to sketch a new approach to literacy planning, this note does not set forth a new theory of adult literacy or rename or advance a set of categories and concepts. In view of the diversity of situations that might be encountered in widely varying local environments, this note is suggestive rather than definitive. It suggests starting points and a framework for planning activities that are empirical, pragmatic and applicable to many situations.

FROM FUNCTIONAL TO SPECIFIC LITERACY

Social scientists and educators have long wrestled with the relationship between literacy and a person's ability to get along on the job and in society. Even if research has not clearly mapped out the literacy requirements of daily life, it does support the common sense idea that a person who is unable to read, write and calculate with reasonable proficiency will encounter serious problems on the job and in other aspects of daily life.

The level of competence needed to meet day-to-day literacy tasks has been called functional literacy. Functional literacy, as distinguished from simple or census literacy, refers to a level of competence beyond that of being able to read and write a simple message in any language. The functional literacy designation followed the idea of functional illiteracy, first used by the U.S. Army in the 1940s to describe recruits who were unable to read and write well enough to perform military tasks.

In developing countries, the notion of functional literacy also enjoys wide currency. The International Committee of Experts on Literacy (1962) issued the following definition of functional literacy:

> A person is literate when he has acquired the essential knowledge and skills which enable him to engage in all those activities in which literacy is required for effective functioning in his group and community, and whose attainments in reading and writing and arithmetic make it possible to use these skills towards his own and the community's development.
>
> In quantative terms the standard of attainment in functional literacy may be equated to the skills of reading, writing, and arithmetic achieved after a set number of years of primary or elementary school.

Several things are important in this definition. First, it suggests that literacy be understood in relation to the particular requirements of functioning in a group or community. This means that functional literacy varys from place to place. Second, the definition stipulates that functional literacy refers to a level of skill that is permanent and

that fosters continual learning. Third, the amount of training in terms of equivalent years of school education is unspecified. Determining a set number of years in school or its equivalent to insure that literacy skills will be retained has proved difficult.

Functional literacy as a benchmark of a person's ability to get along as a literate member of the community took on different meaning in developing countries after 1965. The term functional literacy was used to refer to literacy training that was linked to basic vocational skills development. Functional literacy was the basis for numerous literacy projects undertaken in eleven countries that took part in the Experimental World Literacy Programme (EWLP). The new approach was described as follows:

> The basic characteristic of a functional literacy programme is that it is geared to collective and individual needs. It is "made to measure"; differentiated according to the environment and adjusted to specific economic and social objectives.
>
> The advocates of traditional literacy aim at giving the illiterate sufficient command of the mechanisms of reading, writing and elementary arithmetic to afford him access to the written or printed word. In a functional programme, on the other hand, instruction in reading and writing and the training component (technical, occupational, scientific, socio-economic, civic, etc.) are not conducted separately nor dissociated in time, they are integrated activities, each entering intimately into the other (UNESCO, 1973, p.9).

Two features of functional literacy pursued by the EWLP and other programs are important to note. The first is <u>selectivity</u>. The aim of the EWLP was not to offer a literacy program addressed to the population at large but rather to concentrate on intensive, experimental projects designed for sections of the society where strong motivation to learn was evident. This meant especially those groups that were coming into the orbit of the modern sector. Diffusion of literacy to these groups would help accelerate the development process. The second noteworthy feature of the new approach was the attempt at <u>integration</u> of literacy instruction with vocational training. Thus, functional literacy

> ...claims to be a method of improving the productive capacities of man as a worker by enabling him to acquire, through the medium of reading and writing, the theoretical and practical knowledge needed for a development "project," (Bataille, 1976, p. 39).

Here literacy is not simply related to the work that people do, but rather it becomes a tool for learning and the vehicle for transmitting knowledge and skills related to production.

The functional literacy approach carried out by the EWLP has been useful to planners. The need to conceive of literacy in relation to the environment in which the skills are used is clearly recognized. So, too, is the importance of undertaking literacy training as part of development activities and in relation to work. The shortcomings of the functional literacy approach followed by the EWLP have also instructed planners.

First there are difficulties in adhering to a selective approach to literacy. Despite the important advantages of literacy programs being "made to measure" according to the needs of different groups, the research and development required to tailor literacy programs for different groups can be complex, time-consuming, and expensive. Moreover, as a matter of educational policy, the choice of one group rather than another to benefit from a literacy program also poses problems. Some countries have preferred, and probably will continue to prefer, literacy programs that are not selective but undertaken as a means toward mass education.

Second, the idea of integration in the functional literacy effort, although sound in principle, often breaks down in practice. Designing instruction and writing materials for a beginning reader that can at the same time serve as an effective vehicle for vocational skill development is difficult. Translation of practical activity into verbal representations of that activity is not likely to improve occupational skills when undertaken at the level of beginning reading. For example, farming skills are not likely to improve as farmers learn to recognize words like "field," "plow," and "harvest." In many instances where literacy is intended to be the medium for learning occupational skills, integration becomes simply an effort to identify seemingly relevant job-related content for literacy materials.

Third, a relatively low level of literacy skills and poor prospects for retention are likely to occur as a result of typical functional literacy projects. Functional literacy as a level of proficiency such

that a person's "attainments in reading and writing and arithmetic make it possible to use these skills towards his own and the community's development" (UNESCO, 1962) presupposes a long training period and a high degree of participant achievement. Typical literacy programs do not foster either of these. A survey of about 100 literacy projects showed that during the course of instruction (of which the average duration was 300 hours), "...skills are not developed to the extent of enabling learners to make independent use of them; for permanent learning, such skills need more practice " (International Institute for Adult Literacy Methods, 1971).

The conclusion is that not many people become functionally literate as the result of participating in a functional literacy project. That is, a person will probably not acquire nor likely retain the skill to read, write, and calculate well enough to obtain and transmit information or solve problems encountered in unfamiliar situations. The utility of literacy attainments that are something less than "functional" must be questioned. The planner needs to ascertain what specific increments in literacy skills are needed to make a noticeable difference for a particular occupational group or people in a particular social setting.

An example from The Gambia illustrates this point. The literacy level among traders and producers in the informal sector of Banjul is low. On the basis of international experience of the last several decades, a conventional literacy program would not bring many of these informal sector operators to a level of functional literacy. But, what would be the value of specific improvements in literacy skills that are something less than functional? For instance, would there be value in upgrading literacy/numeracy skills needed to undertake record keeping and banking transactions? Successful acquisition of these skills would not mean the illiterate could then function as a literate member of society. The person would still not be able to read a newspaper, gain information from unfamiliar written passages, or transfer the skills to new situations. But, if the training were successful, the individual would acquire a limited set of skills that are potentially important to earning a living. Moreover, since these skills are ones that would be practiced regularly, they would have a strong likelihood of being retained.

In the past planners did not have to justify undertaking a literacy program. Increasingly, however, likelihood of success of a literacy program can no longer be assumed. A burden of proof has fallen on the planner. Especially for the planners of programs to be undertaken in situational contexts, there must occur adjustment to new realities and scaling down of expectations with respect to literacy and what can be accomplished during the course of literacy training. This suggests the need to update the functional literacy approach and to replace old dogmatics with new pragmatics. The point of departure for a new orientation is that planners would no longer begin with a priori commitment to functional literacy. The recommendation of literacy training would be regarded as problematic and not the preordained solution to a diversity of development problems.

Modification of the functional literacy approach has grown out of both dissatisfaction with past experience and appreciation of the changing environment for literacy described earlier. Such an orientation can be called specific literacy. The term is used to designate a framework of analytical activity to be undertaken by planners before recommending or designing a literacy activity. These preliminary exercises help the planner understand the relationship of literacy to a particular situation and determine whether a literacy activity is appropriate and feasible.

In many places, the orientation to specific literacy results in lengthening the planning process. This is desirable in view of the fact that too frequently the literacy planning process has been short-circuited by unwillingness to question the appropriateness of functional literacy. As a result, the planning exercise moved too quickly to matters of instructional design to a search for potentially relevant content for training and materials. Planners ignored the larger questions of what literacy meant in a particular situation, whether literacy was likely to lead to the desired ends, and whether literacy training was the best option available. Specific literacy, on the other hand, requires that the planner consider whether or not literacy training is to be recommended and proceed, through investigation, to answer a series of questions.

For a specific group of people, working and living in a particular environment, how do existing literacy skills relate to what is required

to get along on the job? Is the level of literacy, and not something else (i.e. insufficient technical skill, lack of tools or credit) causing difficulty? For the particular group, would a specific increase in literacy skills make a noticeable contribution to improved productivity or social well-being? If so, would a short-term literacy training intervention be feasible, and would it likely lead to the desired improvement in skills?

The guiding questions indicate two dimensions to specific literacy: understanding--the meaning of literacy in a particular situation is learned through investigation; and judgement--the investigation proceeds from understanding to judging whether literacy training is feasible. The kind of investigation that will best help the planner address these questions will vary from country to country and situation to situation. There are, however, five overall considerations that characterize the specific literacy approach:

1. Taking the workplace as a starting point. Uses of literacy in daily life are many and diverse; the consequences of literacy extend into many aspects of the life of the individual and the community. To analyze what literacy means in a particular situation is a complex matter. Specific literacy has the planner begin such an analysis in the workplace. The planner must understand in detail how literacy relates or does not relate to people's work. This does not mean that the analysis must stop at the boundaries of the workplace. When exploring the possibility of a literacy activity to be undertaken within the context of a community development activity or to be offered for specific groups of people (e.g. women), the planner should address other funciions of family and community life. Nevertheless, even in these situations, the analysis should begin with the work that people do.

2. Using a diagnostic approach. Specific literacy grows out of the belief that the international concept of functional literacy is not a useful yardstick for planners. Instead, specific literacy has the planner determine what literacy means in a particular work situation. Making such a determination calls for a diagnostic approach. The diagnosis attempts to discover:

   tasks - the range of tasks performed on the job

requirements - the extent that literacy is implicated in the performance of work tasks; what skills, what level of skill, and what language(s) are required

abilities - the level of literacy abilities that are brought to the job

performance - how and by whom work-related literacy tasks are performed or circumvented

3. Locating turning points. To proceed from understanding what literacy means in a situation to judging the feasibility of literacy training, specific literacy has the planner investigate possible incentives found in a situation for acquiring new skills. This is different from conducting a survey of the attitudes of illiterates concerning the importance of literacy or of their expressed willingness to take part in training if it is made available. The specific literacy approach suggests that planners look for "turning points" or "entry points." This is borrowed from insights from past years that literacy programs are most likely to be successful when conducted during periods of national transition--at a "turning point" in the nation's development. In some cases, such a point might occur subsequent to a revolution; in others, such a point might be found during periods of rapid modernization. Specific literacy has the planner apply the turning point notion at the "micro" level. A micro-level turning point could occur as the result of increased competition, new opportunities, or technological change, to name a few. Identification of an economic or social turning point for an occupational group relates to the feasibility of literacy training and becomes a possible entry point for a successful literacy activity.

4. Assessing the limits of a short-term intervention. A second factor in determining the feasibility of literacy training has to do with whether a desired increase in literacy skills can be accomplished during the course of a short-term literacy activity. Specific literacy insists on the need for more realism in this regard than has been found in the past.

5. Identifying generic skills. Another aspect of determing the feasibility of literacy training has to do with identifying literacy skills that are common to other situations. Few countries are able to afford numerous specific programs that reach participants across the spectrum of social groups. Thus, the planner must investigate to what extent literacy skills are common to different groups. For example, to what extent are the measuring skills of the tailor and the carpenter

similar? Can they be taught to a mixed group? Identifying generic skills that are common to different situations greatly enhances the cost-effectiveness and feasibility of a literacy program. Identification of generic skills is addressed later in this note.

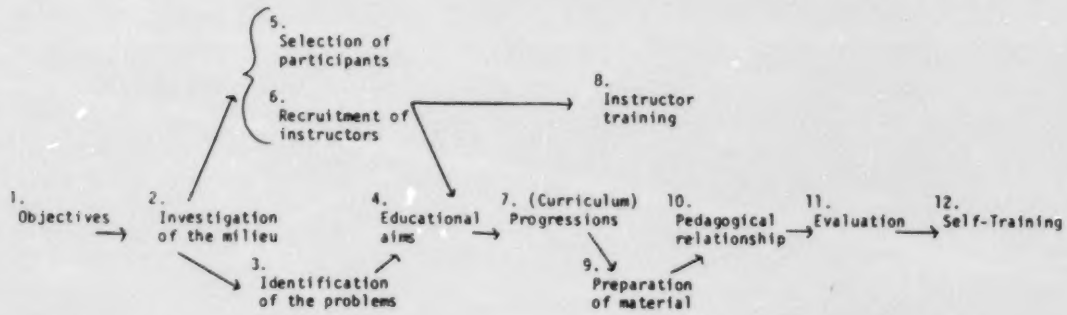
These five considerations form the basis of an approach to the planning of literacy programs referred to as specific literacy. The approach calls upon planners to pay attention to questions of appropriateness and feasibility and to deal with them through investigation. This orientation may be useful to planners in adapting the functional literacy experience of the past decades to the changing climate for literacy activities.

The following sections discuss how the specific literacy approach was operationalized in an investigation conducted with literacy planners in The Gambia.

THE ANALYTICAL EXERCISE

Planning a literacy activity requires attention to many variables. There are many ways to conceive the planning operation as a whole. A good example was the 12-step planning sequence used by the Experimental World Literacy Programme. This sequence is represented schematically in Figure 1.

FIGURE 1. EWLP Planning Methodology (Bataille, 1976, p. 41)



What is important is not elaborating on the different steps but relating the analytical concerns of specific literacy to the planning operation as a whole. The specific literacy analysis concentrates on the needs assessment function contained in the first three steps of the EWLP model.

There are conceptual and practical differences between the specific literacy approach and the first three steps of the EWLP model. The EWLP model begins with identification of development objectives which the training is to achieve. These objectives are then operationalized beginning with an investigation of the milieu. Specific literacy, on the other hand, takes the group to be served as the starting point for planning and then determines how literacy relates to the work performed by the group.

The specific literacy analysis puts a "magnifying glass" on the activities of the workplace. Determining how literacy relates to the work performed by a group of people then leads to judgment on the feasibility of a literacy activity for that group. Only at this time,

according to the specific literacy approach, can the overall development objectives and literacy's role in achieving them be considered. If a literacy program is recommended, the planner then completes the planning sequence.

Identifying and Sampling Target Groups

The analytical exercise of specific literacy begins with identifying a group of people who might be served by literacy or another type of training activity. The planner will likely encounter two kinds of situations, a pre-selected group and an unselected group.

Pre-selected Group

In this situation, the population to be served by a literacy activity is determined by an existing policy or by reason of the group's participation in a development project. The group is already defined for the planner. In the case of The Gambia, this situation was encountered with the Member Education Programme of the Department of Cooperation. The group was defined by the project's functional mandate and geographical scope, i.e., farmers' cooperatives in participating villages. A pre-selected group was also encountered in the case of the Indigenous Business Advisory Services, which had a prescribed list of clients.

Unselected Group

In this situation, the population to be served has not been identified by a policy decision or by affiliation with a development project. Here, the planner may be called upon, prior to the formulation of a project, to undertake analysis that would bear upon selection of clientele to be served by a project. In The Gambia, such a situation was encountered in the investigation of the activities of the informal sector in and around Banjul, Farafene, and Mansakonko. The "group" in this case is defined by municipal boundaries and by the scale and character of the productive and commercial activities carried on there. Of the two, the unselected group presents the more difficult planning situation. It is the one, however, that is increasingly encountered as countries improve urban-based social services.

Coverage and Sampling

The analytical exercise takes an in-depth view of the relationship of literacy to the work performed by a group of people. The planner, after

identifying the group, then determines the coverage or range of occupations of the study and decides on a sample of this population that will be studied through observation and interviews. The planner, even more than the researcher, is likely to face severe constraints of time and resources and will have to resort to less than scientific means in designing the process of data collection.

In studying a pre-selected group, the question of coverage is often straightforward. The planner has, in this situation, the advantage of dealing with a relatively defined population. Sometimes the planner may have a list of names from which to draw a sample. In some cases, the planner may decide to randomly select subjects from this list. More often, however, a "stratified" approach may prove more useful. An example of how a planner might proceed in stratifying and sampling a group follows:

> Planner A works for an organization that provides business advisory services to small enterprises. He has been asked to determine the feasibility of a literacy activity for the organization's clients. Experience tells him that the major difference among his clients has to do with whether they are involved in manufacturing or retailing. Another important difference is between clients that operate in the city and those who operate in smaller towns upcountry. There is an even division between manufacturers and retailers; the majority of the clients are from the city.
>
> Planner A figures that he could spend 2 hours with about 12 clients. He decides to take 6 manufacturers and 6 retailers as a sample. To reflect the disparity between city and towns, Planner A decides to look at 4 manufacturers and 4 retailers from the city and 2 of each group from the upcountry towns.
>
> Planner A knows he will be visiting two towns during a coming trip upcountry. Since town X seems to be more "typical" of the towns the organization serves than town Y, Planner A elects to conduct his study there. For his study of city manufacturers, Planner A decides to look at manufacturers of different articles. For the city retailers, he chooses to look at four retailers in different parts of the city. In selecting his upcountry subjects, Planner A follows the recommendations of the organization's representative there of manufacturers and retailers who seem to be "typical."

Planner A's sample is not random. Nevertheless, a reasonable effort is made to provide that the main characteristic of the subjects appear in

roughly the same proportion that they appear in the total population of the organization's clients.

Determining coverage and selecting a sample for an unselected group is more difficult. When the group in question is as amorphous as the informal sector, an overall view of the range of activities that is performed is difficult to attain, not to mention the number of people involved in a particular activity.

One way to reduce the complexity is to make use of previous studies. Studies of the informal sector in many cities have already been undertaken, particularly by the International Labour Office (ILO) (Sethuraman, 1981). Survey and census data could be important to the planner in that they offer an example of how the informal sector was defined. The surveys indicate the range of work activity performed by the informal sector as well as estimate the number of people involved in different trades. Moreover, surveys often provide data about the educational backgrounds of informal sector operators from which the planner may be able to make inferences about literacy abilities.

In The Gambia, the specific literacy study benefited from a survey called "Employment, Incomes and Production in the Informal Sector in The Gambia." The study was produced by the ILO's Jobs and Skills Programme for Africa. The study's coverage was limited to 13 activities in manufacturing and repair services where the establishment had five or fewer paid employees. The sampling strategy was deemed "unconventional" and was based upon enumerating all establishments that were visible from the street and concurrently interviewing as many owners as possible.

In the specific literacy study of the informal sector in The Gambia, there was different coverage and a different sampling procedure. Some of the work activities covered by the ILO study were included in it; some were not. Likewise, some of the maufacturing and repair activities in the study did not appear in the ILO listing. Moreover, the specific literacy study elected to include retailers and wholesalers in addition to producers and to include subjects outside Banjul.

Obviously, defining coverage and the population of an unselected group such as an urban informal sector, which often employs as much as 60% of the workforce in towns, is a process that is largely arbitrary.

The specific literacy study in the informal sector in The Gambia employed a procedure called purposeful sampling (Bogdon and Biklin, 1982, pp. 65-68). This procedure insures selection of a variety of subjects. No attempt is made to determine how many or in what proportion the types appear in the population. Instead, subjects are chosen because of their usefulness for testing a working hypothesis about a given phenomenon. In The Gambia case, the working hypothesis was that "an improvement in literacy skills would improve success in operating an enterprise in the informal sector." With the advice of numerous Gambians, successful informal sector operators in different trades were sampled. A deliberate effort was also made to seek out less "successful" operators as well. The working hypothesis became progressively modified as data were collected; the modifications suggested subsequent types of subjects.

The purposeful sample proved to be a useful approach to studying literacy in The Gambian informal sector. There are points to be kept in mind in using this procedure for planning literacy activities:

1. A clear working hypothesis guides selection of subjects. The working hypothesis is modified as data are collected.

2. The sample reflects a diversity of types of subjects.

3. The sample is kept small enough so as not to jeopardize the in-depth treatment needed for the present kind of study.

4. A good number of "negative" cases are included in the sample. In the above example, this included subjects that were not successful or situations where literacy would likely have little bearing on success. The planner should bear in mind that the truly "unsuccessful" are often hard to identify, since they would probably not succeed in staying in business.

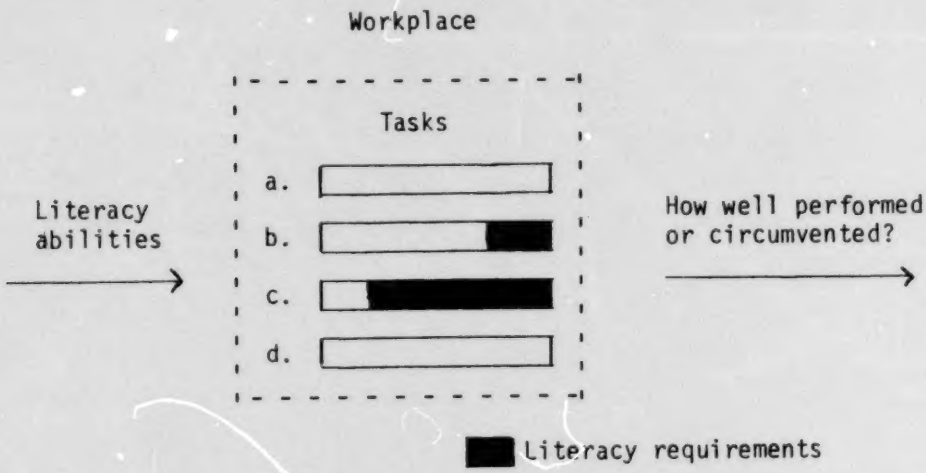
The Specific Literacy Model

The specific literacy analysis, in determining the relationship of literacy skills and the demands for literacy encountered on the job, draws upon experience gained from job-related literacy studies performed for industry and the military. The best example of such a study is described in Sticht (1975). The specific literacy approach, however, addresses situations where work is likely to be less well organized,

less productive, and where the technology involved in the work is less complex and poses fewer literacy requirements.

The specific literacy exercise is diagrammed in Figure 2.

FIGURE 2. The Specific Literacy Model



In the specific literacy model, the planner determines first if a gap exists between literacy demands and abilities found on the job and, second, how the gap is reconciled--either by less than successful job performance or by successful circumvention of the literacy requirement. The results of this analysis help the planner determine whether specific improvement in literacy skills would contribute toward an improvement in job performance and whether a literacy activity would be feasible in the situation being investigated. Again, the uses and consequences of literacy extend beyond the workplace into other aspects of daily life, so the analysis should not erect strict boundaries between work and other aspects of social life. Different aspects of the specific literacy model are discussed below:

Tasks

The planner, through interviews and observation, lists the tasks performed by the subject on the job. The goal is to obtain a set of the most important functions required by the job rather than a microscopic breakdown of all activities related to the job. The complex technical trades require more time and more observation than do the less complicated

trades. The planner lists major tasks keeping in mind that jobs--and this is especially true in the informal sector--often involve both production and commercial activity. Tasks invariably include such things as obtaining primary materials used in production, services, or sales; performing functions required to transform these materials into the different products offered for sale; supervising and training apprentices; marketing of one's goods and services; and conducting other business-related functions.

Literacy Requirements

Given the list of tasks performed on the job, the planner next determines how literacy is implicated in performance of each task. Are there manuals to be consulted, quantities to be estimated, prices to be reckoned, or calculators to be operated? Is money handled, banking done, and records kept? Are written orders, invoices, or instructions received? Are letters to be read or written?

The planner then determines the difficulties of the literacy requirements needed to perform the tasks. In the job-related literacy studies done in industrial and military settings, this determination focused upon readily identifiable reading materials found in the work-place and in the trianing programs for those jobs. In these situations, reliable measures could be applied to predict the readability of the materials. In more traditional settings, however, literacy tasks are not likely to center on readily identifiable reading materials. Moreover, reading demands faced by many in developing countries often involve different languages, e.g., English for workers whose first language is not English. The planner is thus forced to rely on judgment rather than on systematic procedures for determing the difficulty or job-related literacy demands.

Some questions to be asked when making this judgement include:

--Do the literacy requirements involve a language that is the subject's mother tongue, one that is easily understood, or one that is not understood at all?

--For reading tasks encountered on the job, do materials rely on unfamiliar or abstract concepts, make us of complicated sentence structures, or use long words and sentences?

--For tasks requiring arithmetic, to what extent do they involve numbers that do not occur over and over every day, that are not easily solved in the head, or that require writing down and manipulating on paper?

The planner cannot get a precise indication of the level of difficulty of job-related literacy requirements. Nevertheless, a general estimate is useful for planning purposes.

Literacy Abilities

After determining how literacy is implicated in the tasks of a job, the next step for the planner is to assess the range and level of literacy abilities the subject brings to the workplace. There are a number of typologies of skills that make up literacy, but a systematic breakdown of the skills is not necessary. For the purposes of the specific literacy exercise, a general indication of a person's literacy is sufficient. There are several ways that this may be obtained.

One method is the self-report. Subjects are asked about literacy abilities, and the planner records whether the person is able to read and write not at all, a little, or fairly well. This information is checked against subjects' years of school attendance. Studies that have used self-reports on literacy and follow-up tests have found that self-reports correlate well with the objective measures. The self-report is not as well-suited to assessing skill in arithmetic as in reading and writing.

In using the self-report method, planners discover the need to be specific when inquiring about literacy abilities. A question like, "Are you literate?" is often not helpful. People possess widely differing notions about what it means to be literate. Even more specific questions like "Can you read?" often fail to get at a subject's true abilities. In The Gambian exercise, for a number of subjects who responded negatively to a question about whether they could read, probing revealed that they possessed some ability to read and write one of the local languages written in Arabic script. Subjects tended to discount indigenous skills and expressed the belief that being able to read meant being able to read English. The questions asked to obtain a self-report on literacy must clarify specific reading and writing skills. Sample questions might include: Can you write your name? Can you read the Koran? Can you

fill out a bank deposit form? Can you read a government purchase order? Can you read a letter from your son?

A person's ability to write is related to his ability to read. Ability to write is invariably less than one's ability to read. When working with subjects who have little or no ability to read in any language, the planner need not spend extra time assessing writing abilities.

A second method for determining literacy abilities is a formal paper and pencil test. This may include a test of word recognition and reading comprehension as well as facility in arithmetic. A paper and pencil test given to a group of subjects is likely to be a more reliable measure of literacy abilities than a self-report. There are difficulties inherent in using these tests, however. Administering a written test tends to made the interview or observation situation "unnatural," and many subjects are likely to resist taking the test.

A third way to assess literacy abilities is to use, in conjunction with the self-report, an informal or ad hoc type of test. Here, during the course of an interview, the planner follows up a subject's self-report by posing problems to be solved. These problems relate to the subject's work and are presented in a relaxed, informal manner. In The Gambia, this procedure worked well; subjects responded readily to the problems as a natural part of the conversation. In other settings, this might not prove to be the case.

Most subjects in The Gambian informal sector reported that they could read and write either not at all or with very low proficiency. Consequently, informal testing concentrated on numeracy abilities. The problems that were posed dealt with functions of measuring and estimating quantities, determining prices and making change, and performing transactions at a bank. The problems assessed the following abilities: recognizing numbers, mentally calculating arithmetic functions, doing arithmetic using pencil and paper or a calculator, and using arithmetic in unfamiliar situations with regard to calculation of price or quantities. For example, a market woman who priced and sold onions in piles of six was asked to determine the cost of just one onion. A tailor, who could estimate the material needed to make a shirt for the interviewer, was asked to figure out how much was needed for seven shirts. Table 1 shows the numeracy abilities tested.

TABLE 1 Typology of Numeracy Abilities Among Informal Sector Operators

	Number recognition	Mental Arithmetic	Arithmetic done with paper and pencil or calculator	Arithmetic related to an unfamiliar situation
Measuring and estimating quantities	X	X	X	X
Determining prices and making change		X	X	X
Skills needed for bank transactions	X		X	

As the planner gains insight into what literacy means for the work group being investigated, a general assessment of the gap between literacy abilities and literacy demands of the job can be made.

Performance

Locating a job-related literacy gap is insufficient in itself. One of the deficiencies of some job-related literacy studies is that after discovering that job-related literacy requirements greatly exceed the abilities of those people doing the job, no explanation is offered about how the job gets done under such circumstances. The mere identification of an apparent literacy gap often leads to the assumption that literacy training is necessary.

The specific literacy analysis asks the planner to reconcile disparities between literacy abilities and job-related demands. One possibility for reconciling a literacy gap is for the worker to circumvent job-related literacy requirements either by relying on someone else's literacy or by using a strategy to compensate for lack of literacy. Another method of reconciling the literacy gap is to accept a lower level of job performance through high rates of error, inefficiencies, low productivity, or low scales of operation. Examples of both kinds of reconciliation were found in The Gambia and are described in the next chapter.

Determining how a literacy gap is reconciled is of more than academic interest to the planner. A literacy gap may indicate "entry points" where

a literacy activity might be useful. On the other hand, learning how literacy requirements are successfully circumvented should lead the planner to carefully consider why literacy rather than another kind of training would be called for in a particular situation.

Data Collection

As mentioned earlier, there are two methods available to the planner for collecting data for a specific literacy study -- observation and interviews. In most instances, the planner is likely to employ a combination of the two.

Observation lends greater depth to a study than interviewing alone, but it is time-consuming. Planners find that spending one or more days systematically observing subjects at work is a good method of collecting data. It is especially relevant when the situation involves a preselected group or when the planner has difficulty identifying the relationship of literacy to a job because job tasks are numerous, greatly varied, or technical. For an unselected group, where the planner focuses on many different work categories, observations are best carried out when interviews are being conducted. This process is facilitated by having two or more people present, leaving one person free at different times during the interview to observe activities in the workplace.

The specific literacy study in The Gambia relied heavily on interviews with incidental observation. The interviews were conducted in English, when possible, or through an interpreter for one of the Gambian languages. Interviews often lasted an hour or longer, and sometimes subjects were visited a second and third time. The interviews were informal; a script of questions was never formalized or transcribed. Nevertheless, a fairly consistent interview pattern emerged, resembling the following:

Introductions

Explain purpose of the interview

Ask about background of subject
How long working at job? Previous jobs? How the work was learned?

Ask how work is organized.
What is and is not produced, how labor is divided, number of apprentices and how they are used...

Ask how job is performed.
Subject demonstrates and explains different tasks...Interviewers use "How do you...?" questions to learn range of tasks and to uncover literacy tasks...

Ask about subject's family
Have children attended school? Have parents?

Ask subject if he or she has attended school

Ask subject about reading ability
Koran? Texts written in mother tongue with Arabic script?
English? Job-related reading that was noticed above?

Ask about subject's writing abilities
Sign one's name? Write a letter in mother tongue using Arabic script? Using Roman script?

If subject cannot do reading and writing tasks, ask who does them

Ask about arithmetic abilities
Does subject use the bank? Is the subject able to complete deposit slips? Has subject ever been cheated?

Ask subject to solve arithmetic problems
Making change. Determining prices of goods for sale.
Recognizing numbers. The four arithmetic operations.
Solve problems on paper.

Ask subject what would be needed to expand or improve one's trade
Credit? Additional technical skills? Literacy?

Thank subject

The data from each interview were recorded by one member of the study team. At the end of each day, the notes were discussed, and the study team reached a consensus on what was learned from each interview. Agreeing on the abilities brought to the workplace and the demands found on the job was easy. However, agreeing on whether a specific improvement in literacy skills would contribute to an improvement in job performance or whether a literacy activity would be feasible for a particular work group was considerably more difficult. What was learned from the specific literacy study in The Gambia is reported in the following chapters.

CASE STUDIES FROM THE GAMBIA

Introduction

Up to this point this note has elaborated the rationale and methodology for specific literacy. Beginning with this section, data that were obtained from the application of this planning model to various settings in The Gambia are examined. The discussion is intended to accomplish two purposes: first, to describe the relationship of literacy to specific situations in The Gambia using the analytical framework just outlined; and second, to provide the planner with a method for putting the specific literacy model into practice in any country.

Preferences have been made throughout this note to the work activities of the diverse tradespeople, artisans, craftsmen and craftswomen who comprise the urban informal sector of developing countries. This domain of economic activity has been singled out as especially appropriate for specific literacy. The choice was made because short-term literacy training oriented toward the workplace might be particularly beneficial to self-employed business operators.

Populations investigated in The Gambia, however, were not limited to the urban informal sector. Groups representing the formal, wage-earning sector--in this case, workers in the mechanical and carpentry workshops of The Gambian Public Works Department--and the rural informal sector were studied as well. Other settings which, technically speaking, did not qualify as places of work were investigated as well. Among these were: the marketing of crops by illiterate farmers to government purchasing agencies and the use of government health services by children of illiterate mothers. Both situations consisted of an interaction between an illiterate and a modern institution where literacy or numeracy were implicated in some way.

The outcome of applying the specific literacy model to these settings is a series of case studies which reflect a range of needs and possible interventions. The case studies included here have been chosen in order to illustrate contrasting functions of literacy and numeracy in relation to the activities that take place in those settings. Case studies that

concern literacy for the self-employed are discussed in the following section, while literacy in the context of other situations are discussed in subsequent sections.

Literacy in the Informal Sector

The Gambia possesses the same broad spectrum of informal sector trades which make the same major contribution to its economy as in other developing countries. The ILO survey (Sethuraman, 1981) of The Gambia's informal sector estimated a total of 1422 establishments of five workers or less in greater Banjul, the capital and largest city. Limiting the survey to firms no larger than five workers, or course, omits small to medium size firms which many experts classify as part of the informal sector. Even excluding these larger establishments, the informal sector of the economy appears to account for 42% of the labor force in the urban centers of The Gambia.

Thirteen trades of the urban informal sector in The Gambia were identified by the ILO survey. Most of these trades were sampled in the present study along with a few other trades that did not appear in the ILO survey, including traditional, rural-based crafts. In addition to skilled trades and crafts, the present study sampled assorted market traders, shopkeepers and street vendors who sell goods ranging from vegetables to foreign currency under a variety of physical arrangements. The following is a list of the work/business activities of the more than 40 informal sector respondents included in the sample:

- Auto repair
- Blacksmithing
- Building supplies retailing/ petrol station dealership
- Butchering
- Carpentry
- Cloth dealing
- Fish selling
- Fish/lumber wholesaling
- Leather-working
- Money-changing
- Radio repair
- Refrigeration repair
- Sundry goods trading
- Scribe services
- Tailoring
- Tie-dying
- Vegetable selling
- Weaving

This sample obviously embraces a diversity of characteristics that fit no neat categories. For example, the activities themselves are quite heterogeneous: some involve manufacturing, others repair services, and others selling. Some activities like leatherworking, weaving, and blacksmithing are traditional crafts, practiced long before the colonial period.

Others like automobile, radio, and refrigeration repair are best described as "modern" trades since they have been introduced into The Gambia in recent times.

Likewise, the physical facilities and technology associated with these activities defy easy classification. Many of these businesses operate from premises of varying sophistication and permanence in Banjul's central Albert Market. More established firms occupy small storefronts along major commercial streets, while the less permanent activities are improvised on busy sidewalks or wherever a market can be tapped. Manufacturing and repair enterprises are usually conducted in larger "wayside" workshops, where the work may or may not be sheltered from the elements. Some of these workshops are equipped with a reasonable assortment of tools and, in some cases, power-driven equipment, while others are limited to only a few handmade tools. Some commercial traders possess hand-held electronic calculators.

The sample also reflects a diversity of personal characteristics. Speakers of each of the major languages of The Gambia are included in the sample population. Wolof-speaking Senegalese often dominate the skilled trades; on the other hand, Mandinka speakers, the largest language group in The Gambia, concentrate in low-level retailing jobs due, in part, to their recent migration to Banjul from the countryside. As is commonly the case in developing countries, relatively few of the sample were formally educated beyond the middle school level. However, young workers had more schooling than older workers, and men more than women. This reflects the growing difficulty of schooled youth finding wage-earning jobs and the traditional family preference given to boys over girls when considering formal education.

The informal sector operators sampled entered their professions through several routes. Those in the skilled crafts usually started by acquiring the necessary skills either through apprenticeships of various lengths or through a less formal arrangement. Traditional clan-dominated craftspeople like blacksmiths, and weavers, for example, learned their trades directly from their fathers (or mothers). Retailers, by contrast, simply decided what they would sell. They assembled a small quantity of goods and began peddling them on the open market.

The activities investigated were found to be conducted with various degrees of financial success. A few entrepreneurial types have attained a level of affluence that would be judged successful by any standard. These individuals usually operate on a larger-than-average scale and often engage apprentices or other low-paid help. Often they own houses and transport vehicles and take overseas business trips. At the other end of the spectrum are the small-volume, one-person retailers and the young, ill-equipped repairers and producers who struggle to carve out a "niche" for themselves. Their incomes continually hover near subsistence levels because of inability to overcome their small scale of operation and the grinding competition.

This, of course, provides only a very brief sketch of the sample drawn from the informal sector. Many of these characteristics will take on concrete dimensions as the role of literacy is examined in specific work settings. A selection of the cases included in the sample is presented below in terms of the framework outlined in previous chapters.

Refrigeration Repair

Omar is an experienced "Ref" repairman (as the artisans themselves refer to the trade) with nearly 22 years of experience. Along with a partner, he operates a refrigeration and freezer repair service out of a small storefront on a major street in downtown Banjul.

Refrigeration mechanics is a highly technical "imported" trade. As one might expect, literacy and numeracy are required in several aspects of Omar's operation. Replacement parts must be ordered regularly for units being serviced. This involves looking up the names and numbers of specific items in manufacturers' parts manuals and writing them down either on an order form or on a blank piece of paper to be taken to the spare parts shop. Also, the trade manuals which Omar possesses must be consulted occasionally to learn how to tackle malfunctions unfamiliar to the mechanic. Pressure gauges and electrical testers must be interpreted to regulate the gas and electrical systems or to diagnose faults. Finally, on the business side, receipts must be written for customers and an account book of the firm's financial transactions must be kept.

Omar is well qualified to meet the literacy and numeracy demands of his job. Although he did not have regular schooling, he did attend "over-age"

school for a short while. This experience apparently gave him the rudiments of reading and writing. His training in refrigeration mechanics at the United Africa Company beginning in 1960 also relied heavily on literacy. The Norwegian and, later, British refrigeration engineers under whom he studied required him to read books and manuals on the theory and practice of the trade. This experience was sufficiently rigorous to enable him to pass a trade qualifying test and receive a regular salary for his work.

From all indications, Omar has no difficulty performing any of the job tasks that involve literacy and numeracy. He is experienced enough at his craft to require few if any references to repair manuals or text-books. And the ordering of spare parts is a routine matter after so many years of self-employment.

Omar's concern at the moment is with the business aspects of his workshop. Although eminently successful as a small business owner, he nevertheless entertains ambitious plans for future entrepreneurial activity. His frustration over the monopoly of a few large spare parts dealers in town fuels his determination to set up his own parts distributorship. He hopes to combine commercial fishing and refrigeration by establishing a cold storage facility for fish catches -- an idea that is probably rooted in his brief exposure to marine navigation during an apprenticeship with the Marine Department.

Omar has applied to the Indigenous Business Advisory Service (IBAS) for a D20,000 capital investment loan to finance these proposed ventures. As a pre-condition for the loan, he is obliged to keep a "cash book" of his firm's revenues and expenditures. IBAS officers have taught Omar how to keep such a cash book, and he has apparently had little difficulty maintaining regular records in this format.

Although no obvious literacy gaps were discovered in the performance of Omar's functions, the same may not be true for the work practices of his four apprentices. Omar trains his apprentices in a "practical way" rather than through the use of reading material as he was taught. He claims the practical method is more effective since "you wouldn't get the time to learn by reading." His preference for this pedagogical approach is necessitated in part by the mixed educational and linguistic backgrounds of his apprentices. Two of his apprentices have had extensive schooling,

while the other two never attended school. Moreover, one was taught in French while the other was taught in English. Whatever the merits of using a "practical" approach in which information is transmitted orally, questions are raised about whether the apprentices will be able to meet the literacy demands of the trade once they are in business for themselves or once Omar needs journeymen as his business expands.

Vegetable Retailing I

Salimata is a vegetable seller in Banjul's Albert Market. She works alone without the benefit of even an open stall or counter to display her produce. She positions herself strategically to take advantage of the heavy foot traffic in and out of the meat market. She sells only one commodity--lettuce--which she grows in her own garden. Her sales are limited to the amount of produce she can transport to the market in a metal pan carried on her head.

Salimata's small scale of operation engenders few occasions for employing written communication. There are no trade publications, licensing forms, or printed regulations to be read. No records of business transactions are kept, and, because she maintains no bank account, not even checks or deposit slips need to be filled out.

Numeracy, by contrast, figures prominently in Salimata's market transactions. For example, she must determine the unit price she charges for her produce. This is simplified by the fact that she does not have to buy from a wholesaler, but she still has to calculate the costs of growing lettuce herself. She is also required to make change for customers who present her with larger denomination currency. One might argue, of course, that these market calculations can be made mentally with a reasonable degree of accuracy. This would depend on Salimata's proficiency in doing mental arithmetic.

Salimata has never attended school or participated in anadult education activity. Aside from having had no formal opportunities to become literate, she also shows little evidence of having been influenced by any informal exposure she may have had to written symbols. She cannot recognize or write numbers, although she works with them everyday. Neither can she sign her name.

Salimata's survival as a small retailer depends, therefore, on her ability to make calculations in her head. Brief tests of this revealed weaknesses in her mental arithmetic. Problems were presented which required her to make change for typical market transactions. On one level of difficulty, she was accurate: 7 heads of lettuce at 6 bututs was deduced to be 43b.[2] However, when asked to make change from a 5 Dalasi bill (D 1 = 100b) for a purchase of 5 big heads at 25b and 5 small heads at 6b, she arrived incorrectly at D 3.31 as the change. In this instance, the effect would have been the shortchanging of the customer. However, the very occurrence of her error, as well as the deliberate, almost faltering manner of her effort, leaves one with the impression that she could just have well cheated herself.

Vegetable Retailing II

Fatou also sells vegetables in the Albert Market. She does business from an open-air stall in close proximity to several other women market sellers. Like Salimata, her income is limited to the few quantities one person can sell at small profit margins. In contrast to Salimata who grows her own produce, Fatou obtains here vegetables from wholesalers early each morning.

As one might expect, Fatou must do arithmetic that is similar to that required of Salimata. She, too, has to tabulate multiple quantity purchases and make change for large denomination bills. However, she faces the additional problem of coordinating her purchases from wholesalers with her

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[2] Gambian currency is based indirectly on the old British currency. Many of the terms were carried over into the new decimal currency with the result of a floating butut (b) (the unit of currency). netaa = 6b, tanka = 12b, and taransu = 25b.

1 tanka + 1 tanka = 1 taransu
12b + 12b = 25b

4 heads + 2 heads + 1 head = 7 heads
1 taransu + 1 tanka + 1 netaa
25b + 12b + 6b = 43b

own retail sales. She must be able to determine the unit price she pays in order to know whether the price at which she sells will turn a profit. Fatou is ill-prepared for these numeracy tasks. She neither reads nor writes in any language and recognizes no letters or numbers whatsoever. Her ability to calculate is limited to what she can do in her head.

Many of Fatou's problems revolve around the process of unit pricing. To begin with, she purchases her produce from wholesalers in basketloads rather than by the pound or by the bunch. This is not unusual, although not knowing the total weight or the number of bunches in the consignment does complicate calculation of a unit retail price. In this case, a unit price could be determined only by counting out all the items in the consignment and dividing it into the price paid--something Fatou does not or cannot do.

The problem arises when Fatou returns to the market to sell her vegetables. Because she is unable to calculate the unit price of her basket of produce, she never knows beforehand whether her retail prices will reap her a profit or even cover the cost of the items. On the day she was interviewed, she estimated her earnings to be 37b; apparently she never makes more than D2 or D3 a day--indeed, some days she loses money. Obviously, the profitability of her business will be more a matter of chance than of any planning on her part.

Some of Fatou's low profits can be attributed to the prevailing price structure in the market rather than to her ignorance of unit prices. The price at which she must sell, say, a head of lettuce or a group of tomatoes is based, not on the wholesale price of the day, but simply on what the market will bear. But some fore-knowledge of these price relationships would improve her current precarious circumstances. In the absence of such knowledge, Fatou and many of her market colleagues simply attribute their business fortunes to a variety of fatalistic causes.

Building Supplies Retailing/Petrol Station Operation

More successful than the previous two women is Binta, a businesswomen in the upcountry town of Farafene. She is the owner of a petrol station and a shop which retails cement and corrugated tin roofing. An older woman, Binta has been able to rise to the rank of shopkeeper from her modest beginnings as a small trader in fabrics. She employs three workers to help

her run the petrol station while she handles the shop herself.

As an owner of a moderate-sized informal sector enterprise, Binta encounters literacy demands which are absent from micro-scale retailing. These demands are seen most clearly in the relationships she maintains with institutions of the modern sector. The strict legal and financial terms that define these arrangements are frequently spelled out in writing. For example, a local bank has issued Binta a guarantee allowing her to buy goods on credit from a government parastatal, the National Trading Company. As a party to these agreements, she must know the content of the letters of credit, invoice forms, receipts and other documentation that exchange hands.

Like the market retailers discussed earlier, Binta encounters "market math" problems such as tabulating unit prices and multiple-item purchases and making change. But the large sums of money and quantities of materials in which she deals adds a new dimension to these problems. Amounts numbering in the hundreds and thousands, rather than simply the dozens, are likely to stretch mental arithmetic beyond its limits of usefulness. The high price of being inaccurate in dealing with large figures encourage reliance on an electronic calculator or on paper and pencil arithmetic for calculations and on written records for storing business information. Indeed, Binta's bank has stipulated that written financial records of her business be presented as a prerequisite for a loan for any further expansion of her commercial activities.

Binta possesses none of the literacy and numeracy skills that appear indispensable to the management of her business. She cannot read documents from financial institutions, keep written accounts, or fill out checks or deposit slips. Binta is unable to recognize numbers although, like the two previous retailers, her livelihood depends on skillful manipulation of numbers.

Left to her own devices, Binta fares no better than the vegetable sellers in mentally solving many of the business math problems. When asked to calculate how much 45 bags of cement would be at D15 a bag, she deduced D490 rather than the correct amount of D675. She claims to be able to "somehow arrive at the correct price" even though she admits that she cannot divide. Her task is made easier because the retail selling price of cement

is set by the Price Control Board. To this price she merely adds her labor and transport costs.

Unlike the vegetable retailers, however, Binta effectively avoids the literacy and numeracy demands of her work. She depends on bank tellers to fill in deposit and withdrawal slips and then asks other individuals who work in the bank or other customers what amount has been written on the slip. Binta also relies on her children, who have been to school, for assistance with other literacy tasks.

Despite circumventions like the above, Binta is a successful businessperson. In addition to her two places of business, she owns houses in Farafene and property in Banjul. Several factors have undoubtedly played a part in her success, including shrewd business instincts and the one quality she regards as most important--honesty. Binta's success belies the view that illiteracy is an insurmountable barrier to successful entrepreneurship.

On the other hand, Binta does pay a price for her illiteracy. Because she is unable to furnish a written record of her firm's financial status, the bank has refused to grant her a business development loan. While this decision is unlikely to leave any tangible mark on her exisitng operations, it will freeze the business at its current plateau of development. Perhaps Binta will continue to encounter painful reminders of her dependency on the others to meet her literacy needs.

Sundry Goods Retailing

Lamin runs a small retail shop in downtown Banjul which stocks an assortment of items ranging from fabrics to buckets. Several employees or "boys," as he calls them, assist in transporting and shelving goods, carrying messages, and sometimes waiting on customers.

As seen in Binta's case, shopkeepers encounter far more occasions for dealing with modern institutions--and their attendant, printed documentation--than do "street corner" retailers. The large cash flow of these businesses makes banking a virtual necessity. Shops are highly visible and their owners cannot easily escape detection by government regulatory agencies; hence, they need to fill out income tax and registration forms. If operators wish to import goods from abroad rather than buy them locally, they must apply in writing for an import license. Local Purchase Orders (L.P.O.'s), which

government departments issue when procuring goods or services from private establishments, must be processed. Receipts for goods purchased are required by many customers.

Lamin is better equipped than Binta to discharge these literacy and numeracy functions. He can read and write Arabic to some extent. He is able to recognize and write numbers. Lamin can add, subtract, and solve multiplication problems by laboriously adding up the individual elements. His ability to solve division problems was not tested.

Like Binta, Lamin has achieved remarkable success because he has circumvented the literacy skills he lacks. His most unique circumvention is use of an electronic calculator to replace all paper and pencil mathematic routines in which he is not fully competent. Brief testing indicated that he can operate a pocket calculator with a great deal of facility.

His literacy (as opposed to numeracy) needs are met, as they are in Binta's case, by relying on others. His boys and his typist write letters for him and read the prose on forms, checks, and bank slips. However, he has been cheated twice using this system. A custom's agent attempted to overcharge him D17,000 in import duties by falsifying a custom's declaration form. A bank teller also pocketed one of his deposits and disposed of the deposit slip, thinking that an illiterate would not notice the loss. In both cases, the attempted embezzlement was thwarted because Lamin produced records of his transaction that exposed the ruse.

Radio Repairs

Kemo earns his living as a professional radio repairer. Here "radio" refers loosely to any array of transistorized electronic devices, including radios, record players, speakers, headphones, and tape recorders. He began repairing radios 15 years ago after initially working on his own radio. Occupying an enclosed stall in Albert Market, he is now one of the most well-established radio repairmen in town.

Radio repair is obviously a technical trade that draws on literacy skills in one form or another. Reading textbooks and trade manuals assists in understanding the abstract principles that govern the operation of electrical and electronic equipment and the procedures for their repair. Correct readings of scales and gauges on test instruments must be made in order to diagnose malfunctions. Parts must be identified by name and manufacturer number when ordering from spare parts dealers. On top of this,

all the business-related literacy and numeracy demands identified already in the other settings need to be fulfilled in this case as well.

As far as informal sector tradesmen go, Kemo appears to be no worse prepared than the average individual who practices a technical craft. He attended school for three years. From this experience, he learned numbers and simple arithmetic. His deficiency is being unable to read. One can only surmise that either his three years of schooling were insufficient to help him establish a minimal ability to read or that he had slid back into illiteracy from years of disuse. Kemo is, however, able to recognize letters and even some familiar trade words.

Were it not for a feature of electronic devices that allows malfunctions to be diagnosed in a practical way, Kemo would most certainly not be practicing this craft today. By mastering a single test instrument, an amp/volt meter, he repairs the latest electronic products without any training on how they work. He simply applies the leads of his meter to each component in turn until the position of the needle on the scale indicates a malfunction.

Kemo's letter and number recognition skills are used in his work, however. He must know the number on the meter scale where the pointer indicates a defective transistor or other component. When a defective part is identified, he uses the letters and numbers of its manufacturer code to locate an identical part in a nonfunctioning unit which can be cannibalized. In this regard, Kemo may be more competent than some of his competitors. A completely illiterate radio repairer who was interviewed relies exclusively on just the color codings on the part to identify replacements.

A literacy gap is demonstrated by Kemo's inability to extract technical knowledge from trade publications. True, one might argue that this is not important since there are no printed materials available in his workshop to read anyway. But in fact he has acquired very little knowledge about electronics through other channels. Although he recognizes such trade terms as "volts," "amps," "ohms," and "watts," he seems to have only a vague understanding of the theoretical concepts they represent. According to his definitions, "volts receive the current; amps is for light; ohms is the power, and watts is the weight of the speaker."

Electricity is described as the "light" or the "fire." When asked how a radio works, he says, "You capture the voice with the receiving transistors, and it is passed to the condenser."

Whether or not Kemo's superficial technical knowledge compromises the quality of his repairs is a matter for further study. He claims to have fixed every radio that has been brought to him for repair. Yet Kemo himself admits he would be able to "learn properly" with some literacy skills. In terms of the impact of illiteracy on the training of his apprentices, he acknowledges too that it might take only two years, rather than the present five years, for apprentices to learn the trade if they were literate.

Carpentry

Momodou practices carpentry in Serrekunde, a growing urban center near Banjul. Along with Omar, Momodou is one of two subjects in the sample who has had a taste of both the formal and informal sectors. For a few years he was the assistant manager of a furniture-making factory in Dakar with 50 employees. Now that he has returned to The Gambia, Momodou heads a firm of seven employees (three of whom are apprentices), which qualifies him as a member of the informal sector.

When they are done well, carpentry and cabinet-making are exacting crafts. Literacy comes into ply in this trade only in a peripheral way. Numeracy, on the other hand, is implicated in every phase of the activity. The number of boardfeet of lumber for a given job--whether it be the construction of a chest of drawers or a house--must be estimated. A tape must be used to measure boards to precise dimensions. Blueprints and schematic drawings have to be interpreted accurately to comply with the specifications of the design.

Momodou never attended school and, therefore, never had any formal exposure to arithmetic. His employment in the Senegalese firm, however, apparently endowed him with the number recognition skills to read a tape measure and to cut and assemble the pieces to reasonable standards of exactness and symmetry. One look at the quality of the furniture he produces leaves no doubt that he satisfies the technical numeracy demands of the trade.

The business side is another matter. Momodou can calculate well enough to keep track of the cost of materials and labor for each job. But he depends on bank tellers to fill out the checks and forms for his checking account. Of more consequence is Momodou's inability to keep written records of his business. He has approached the Indigenous Business Advisory Service (IBAS) for a loan, which has been refused for that reason.

Momodou is the quintessential "wayside" innovator. He proudly shows off prototypes of products he has reproduced from photographs in foreign mail-order catalogs. Already his lamps, stands, and other accessories modelled on these catalog designs are finding their way into Banjul's department stores. To produce these items in quantity, he has designed several homemade power tools (including a lathe, drill press, and table saw) which he has cleverly fabricated from scrap parts.

Momodou is precisely the kind of small entrepreneur who could, given the necessary inputs, become a legitimate mass producer of furniture. Indeed, he is eager to expand his operation and cites the lack of capital to purchase larger amounts of lumber as the only thing holding him back. Sadly, his mechanical genius and enthusiasm are not matched by a similar sophistication in his managerial capacity. Momodou's reactions to the IBAS decision suggest that he may resent being told that a simple administrative procedure like keeping a cash book should stand in the way of him receiving a loan.

Literacy in the Formal Sector

Most development observers agree that the connection between literacy and employment in the formal sector has long since been established. A substantial amount of research has been assembled on the ways that reading, writing, and arithmetic become intertwined with other skills of the formal sector workplace. In fact, as the studies have shown, literacy and numeracy requirements in these settings often become elaborated as formal qualifications both for entry into a job and for promotion once employed. One would expect to more easily find instances in the formal sector where specific increments of literacy skill could make an observable difference than in the case of informal sector settings. The following discussion of a few formal sector settings is not intended to treat this questions in an

exhaustive manner but merely to highlight some instances where literacy and numeracy are deployed for specific functions in the job activities.

The term "formal sector" signifies various things to different people. Here it refers to the productive and service activities of establishments with 30 or more employees. The particular constellation of factories, government agencies, mining companies, and service industries that exist in a given place gives each country its own formal sector "profile." In The Gambia, industrialization has not proceeded as rapidly as in other countries. As a result, the formal sector satisfies only a small percentage of the overall employment needs of the country. Aside from the usual government ministries and agencies, large-scale wage employment is generally confined to firms engaged in tourism, peanut processing, and the manufacturing of a few import substitutes.

The individuals who work in these establishments, particularly in the lower echelons, resemble in many respects the self-employed operators who have just been described. Many have had no more formal education than their informal sector counterparts. Those who do are often quickly advanced into responsible positions that take advantage of their skills. In terms of financial remuneration, receiving a wage for one's labor does not in itself bestow economic benefits unavailable to those who collect fees for their products or services; some of the most successful entrepreneurs are as prosperous as well-paid factory supervisors. Wage employment, however, probably does insure more systematic job training and security.

Activities drawn from three large sources of employment in the formal sector of The Gambia were investigated:

Government Office - messenger, clerk/typist

Tourist Hotel - lifeguard, cook, bellboy

Public Works Department - automotive repair, carpentry

This small selection of employment settings, of course, makes no pretense of adequately surveying literacy in the formal sector of The Gambia. This was not the main thrust of the study. It does, however, establish the existence of literacy and numeracy requirements in formal sector workshops (just as they were found in the market stalls and the wayside workshops) and highlights some of the ways these skills become intertwined with the performance of tasks in these settings.

The following cases present data relating to activities in two formal settings: a tourist hotel and the mechanical workshop of the Public Works Department.

Tourist Hotel

The tourist industry generates a healthy share of the foreign exchange revenue of The Gambia. The beautiful coastline extending southward from Banjul is lined with luxury hotels which cater to tourists from Northen Europe during their winter months. These hotels offer a wide complement of services one usually associates with tropical vacation spots. The nature of these services quite naturally opens up employment opportunities for Gambians as restaurant workers, clerks, bellboys, maintenance personnel, lifeguards, laborers, and miscellaneous staff.

Abdoulie is a lifeguard at one of the most popular resort hotels in The Gambia. His job is to insure the safety of swimmers along the beach in frontof the hotel. In addition to saving an occasional stranded swimmer, he observes the action of the surf and tide and posts flags advising swimmers of the conditions. Most of his time is spent sitting on the beach conversing with hotel guests or poring over language textbooks.

Abdoulie's work as a lifeguard has few demands other than ability to swim exceptionally well. The abilities to read, write, and do arithmetic are not among the qualifications required for the job. A good command of oral English, on the other hand, appears to be an asset, if not a necessity, for a position that offers so much direct contact with foreign visitors. Because the first language of most guests is not even English, there are advantages in knowing Danish, Swedish, Norwegian, or German as well.

Abdoulie has systematically undertaken the awesome effort of becoming multilingual in these languages. In so doing, he has devised what is perhaps the most inventive use of literacy for learning in the entire sample. As a youth, Abdoulie attended Quranic school where Arabic was the language of instruction. He actively retains facility for writing the Arabic script even though he has long since left school. Besides its traditional role in Quranic education, Arabic script provides a means of symbolically representing other languages. Thus, Abdoulie has, in effect, become literate in his

native tongue, Fula, through the medium of Arabic script. This is not unusual for Gambians. Several individuals in this survey who had been educated in Quranic schools adapt Arabic script to their own languages. What is unique is Abdoulie's use of Arabic script as an aid for learning European languages.

Abdoulie begins by asking native-speaker informants how they say certain expressions in their language. He then employs a three-step system to transform an utterance into a form that lends itself to practice and memorization. First, he finds phonetic equivalents among Arabic symbols to represent sounds of the foreign words and sentences. Then, he translates the resulting string of Arabic symbols (which would make no sense in the Arabic language) into a meaningful Fula expression, again using Arabic script. Finally, he relates this pronunciation notation and this notation containing the meaning to the written expression in the European language. In addition to this exercise, Abdoulie is also engaged in a painstakingly slow effort to transpose a German language textbook into Arabic script after a German-speaking person pronounces the passages for him. Under each transposition, he writes the meaning in his native Fula again using Arabic script.

Abdoulie's dedication to this objective is remarkable. Yet, there is sound logic hidden in his extraordinary effort. As a serious student of Islam, Abdoulie hopes to raise the money to travel to Mecca someday where he can obtain support from the Saudi government as a resident scholar. He would probably never attain his goal if he had to rely solely on his job as a lifeguard. But by being able to offer information and assistance fluently in several European languages, he can supplement his income with generous tips from his surprised and grateful hotel guests.

Literacy is more visibly present in the work of a cook than that of a lifeguard. While reading and writing are obviously unnecessary for the food preparation itself, they do prove helpful in drawing up menus, reading an occasional recipe, and ordering supplies. Even when the culinary skills are beyond question, literacy deficiencies can have unfortunate consequences for a cook.

Sambo is a case in point. He is a professional cook with ten years of experience as head chef at a tourist hotel. During his interview,

he was out of work and pessimistic about the prospects of finding a job. The hotel where he had formerly worked let him go because of financial difficulties stemming from the general decline in the tourist trade over the last several years.

Sambo has pinned his hopes on finding work in other tourist hotels. His search has not succeeded so far. He applied for a position as a cook at a new, luxurious hotel but was refused the job. The refusal was based entirely on the question of literacy. Although Sambo can read a little English, he cannot write, and the hotel managers wanted to hire a cook who could write up the daily menu.

Mechanical Workshop: Public Works Department

As the sole provider of mechanical maintenance services to the Gambian Government, the Mechanical Workshop of the Public Works Department has the unenviable responsibility of keeping the government's fleet of motor vehicles and heavy equipment in good repair. Everything from automobiles and trucks to tractors and bulldozers are repaired in the cavernous main facility in Banjul and in smaller regional workshops. Among the important contributions the Mechanical Workshop makes to the nation's economy is to service the trucks that carry out Gambia's cash crops.

These maintenance responsibilities are carried out by three different but interdependent divisions within the workshop. One division repairs cars and other light, gasoline-powered vehicles; another repairs trucks and heavy equipment; and a third does the machine tool services for the other two. This technical work is distributed among several dozen employees along lines that parallel the specialized operations of the divisions. For example, a machine tool operator might be assigned to turn the brake drums for a Land Rover, but would not be asked to disassemble or assemble the brakes on the vehicle. A small administrative unit, headed by an expatriate engineer, coordinates the respective activities of the divisions, handles the paperwork, and provides liaison with other arms of the government.

In an establishment of this size, work cannot be expedited in the informal manner of a wayside repair shop. It requires, instead, a more structured, "rational" organization of labor and machinery where literacy

is an essential element. In fact, this is the case with the Mechanical Workshop. From the moment a disabled vehicle enters the workshop until it emerges fully operational, work follows a standardized format that relies on literacy and numeracy at every step.

A Vehicle Inspection Officer makes an initial judgment of the probable fault and writes up a job order to the appropriate division. The foremen of the divisions then distribute job orders to their workers, who must correctly interpret the preliminary diagnosis before proceeding with the repair. Precise measurements, such as setting spark plug gaps, point gaps, and valve clearances, are made with number-calibrated measurement instruments. Gauges and testers are used to take readings of the electrical systems. A repair manual is often consulted for precise specifications in making adjustments or for step-by-step instructions to repair an unfamiliar malfunction. If spare parts are called for, the mechanic looks up replacements in parts manuals and fills out requisition forms. Finally, when the job has been completed, someone prepares a statement itemizing the costs of labor and parts incurred during the repair.

The technical staff of the Mechanical Workshop are by no means uniformly competent to cope with these literacy and numeracy demands. About half of the workers have had little or no formal schooling and are unable to read, write, and do simple arithmetic. The literacy gap tends to reflect age distinctions. Young mechanics, many of whom are apprentices, often begin their employment with several years of formal education to their credit. Older workers, who make up the bulk of the workforce, usually have neither formal schooling nor formal technical training. Illiteracy even reaches into administrative levels, since length of experience has been the basis for promotion until recently.

The Mechanical Workshop exhibits few obvious signs of impaired capacity that can be attributed to literacy gaps in the workforce. The institution seems to have over the years fulfilled its public missions. Closer inspection, however, reveals the same kind of inefficiency and low productivity that plagues small-scale repair shops. These problems reduce the quality of the work in subtle ways. Occasionally, malfunctions are mis-diagnosed and subsequently mis-repaired. In other cases, repairs are

not done according to accepted technical practice, resulting perhaps in frequent future malfunctioning or in vehicles being subjected to long delays before being put back on the road.

Some inefficiency, no doubt, is brought on by inadequate funding from the government to purchase spare parts, resulting in dismantled vehicles sitting in the workshop for weeks at a time. However, the small delays, bottlenecks, and mistakes that occur in the course of each workday point to skill deficiencies among workers as a major cause of lowered performance. Illiteracy is responsible for some of these.

In the Mechanical Workshop illiteracy undermines both individual and institutional productivity. Illiterate mechanics often try to circumvent the need for precise measurements by employing razor blades to adjust valve clearances, usually at the expense of needed accuracy. Literate workers are continually relied upon to handle such straightforward tasks as looking up information in spare parts and repair manuals and writing job order, bills, and part requisition forms. When literate supervisors are diverted to these tasks, their supervisory functions go untended. Especially burdensomeis a literate supervisor doing paperwork for an illiterate supervisor.

Shop mechanics who are unable to read have difficulty keeping abreast of constantly evolving technology and changes in repair procedures that are communicated in repair manuals. Although their extensive practical experience should not be discounted, illiterates will probably be put at a disadvantage with literates in being able to acquire useful theoretical knowledge. They certainly cannot participate on an equal footing with literates in any in-service training program. Finally, in terms of manpower development, illiteracy means costly underutilization of labor. Illiterates are excluded from jobs such as operation of machine tools and, thus, are relegated to highly circumscribed roles with little or no potential for personal advancement.

Literacy in Other Development Situations

The question of literacy is increasingly presenting itself for the planner's consideration in a variety of situations where development activities are underway. These situations may include activities of daily

life that go beyond the usual bounds of the workplace or are defined by the activities of a development project. The uses of literacy outside the job may be as relatively inconsequential as recognizing a shop sign or the numbers on a lottery ticket, or as critical as learning the instructions for mixing infant formula or handling crop pesticides. Two cases not relating to the urban informal sector were considered in this study. They suggest that a specific literacy approach might be useful for planners working across the spectrum of development concerns.

Marketing Peanuts

Peanut or groundnut farming, as it is called in The Gambia, is the mainstay of the nation's economy and the central occupational activity of the rural population. Subsistence farmers grow this widely consumed legume on tiny plots using practices that have changed little over many generations. Peanut cultivation is important to the country not only for the livelihood provided to many thousands of rural dwellers, but for the foreign exchange income the crop earns on the world market.

Like small-holder farmers in other developing countries, Gambian peanut farmers enjoy little real control over the fruits of their labor. Circumstances oblige them to market their crops through a large government organization known as the Cooperative Buying Agency, which assumes total responsibility for transporting, processing, and eventually selling the commodity abroad. As a result, their incomes depend on both the fluctuations of international prices and the share of proceeds the government claims.

The actual purchase of the peanuts is done by official buying agents shortly after harvest. They preside over a public weighing of the crops at village collection points and then calculate the amount to be paid for each farmer's consignment on the basis of its weight. Farmers receive a cash payment that must support themselves and their families for the entire year. Needless to say, their annual financial well-being depends on the outcome of this single transaction.

As a commercial transaction, the weighing and pricing of peanuts is not a complicated or mysterious operation. First, the filled bags are weighed in turn on an Avery Scale. The weight of all the bags is then

totaled up, and the tare weight of the empty bags is subtracted from the total. The value of the entire consignment is computed from a standard price-per-weight unit, and a receipt for the final purchase price is drawn up. Although it is straightforward, the process does require literacy or numeracy skills at every step: number recognition to read the scales; addition of several rows of numbers up to four digits long; subtraction; ability to read a "tariff" reckoner; and the ability to read words such as "weight," "kilogram," "tare," "total," "groundnut," and "Dalasi."

Unfortunately, few Gambian peanut farmers are able to handle these tasks. Very few if any have ever attended school, and only an occasional individual has participated in an adult literacy class. Nearly all can do some calculating in their heads, but these skills are inadequate for four-digit figures and fractions. A few may even have been exposed to Quranic education, but, here again, Arabic script does not suffice for a document written in English.

The weighing event is a source of considerable distrust on the part of farmers. They suspect unscrupulous buying agents of using the occasion to defraud them of legitimate incomes. Because farmers are generally unable to monitor the proceedings properly, their suspicions are not without foundation. Opportunities for widespread cheating obviously do exist where such operations are conducted by indivuduals with a monopoly on the relevant skills. A few farmers do attempt to deter cheating by bringing in an educated son or daughter to oversee the sale. But these isolated circumventions hardly allay the sense of powerlessness felt by most farmers. Whether or not dishonesty actually occurs in the transactions, farmers are almost unanimous in their belief that they are victims of dishonesty.

Health Clinic Records

The Ministry of Health, with the support of technical assistance agencies, operates a network of public health clinics throughout the country. These clinics have been set up to provide primary health care to the general population at nominal expense. They extend coverage to people in the society who would not otherwise have access to such benefits.

The services offered by the clinics vary according to their size and location. Large clinics equipped to deliver a full spectrum of in and outpatient services are reserved for large towns and regional centers. Small

out-patient clinics staffed with a nurse and a few aids are widely dispersed to address the immediate medical needs of local communities. Regardless of their size or location, however, the clinics are inundated daily with individuals seeking attention for a plethora of medical and health concerns.

Among those regularly frequenting the clinics are infants and young children brought by their mothers. In many instances the purpose of the visit is to receive treatment for specific illnesses. But more often than not, the children are brought for innoculations and routine monitoring of their growth and development. Through encouragement of the clinic staff themselves, these regular checkups have become regarded by many Gambian families as a necessary preventive measure in rearing children.

Clinics, of course, maintain clients' records and undertake the responsibility of educating mothers about health issues relating to their children. Clinics accomplish this latter function in part by issuing a document to mothers which both lists vital statistics such as dates of innoculations and also tracks developmental indicators like weight, motor movements, and language behavior over time. The latter information is represented in graphic form known as the "Road to Health," as shown in Figure 3. This card renders the vital health data of a child into a form that can be taken home and studied at one's leisure.

Reading ability is helpful, if not essential, in interpreting the information on this record card. At the very least, the parent should be able to recognize the names of the children in order to match the cards with the names correctly. Preferably, she should be able to read dates of birth and the words and numbers associated with the different innoculation dates so she will know when to bring the child to the clinic. Complete use of the card would also entail the ability to plot the child's developmental progress along the axes of the "Road to Health" graph.

The majority of women who visit the clinics cannot decipher the data recorded on the health card. They simply bring the cards along and allow clinic personnel to explain the contents.

From one point of view, such a deficiency does not appreciably harm the quality of the health care the children receive. Misunderstandings can be cleared up during the visit, and important information can be conveyed to illiterates orally. Indeed, the "Road to Health" graph was designed with

CHILD'S HEALTH AND WEIGHT RECORD OVER FIRST FIVE YEARS

MAJOR ILLNESSES AND IMPORTANT EVENTS (e.g. WEENING) TO BE ENTERED VERTICALLY ON CHART AGAINST THE APPROPRIATE MONTH.

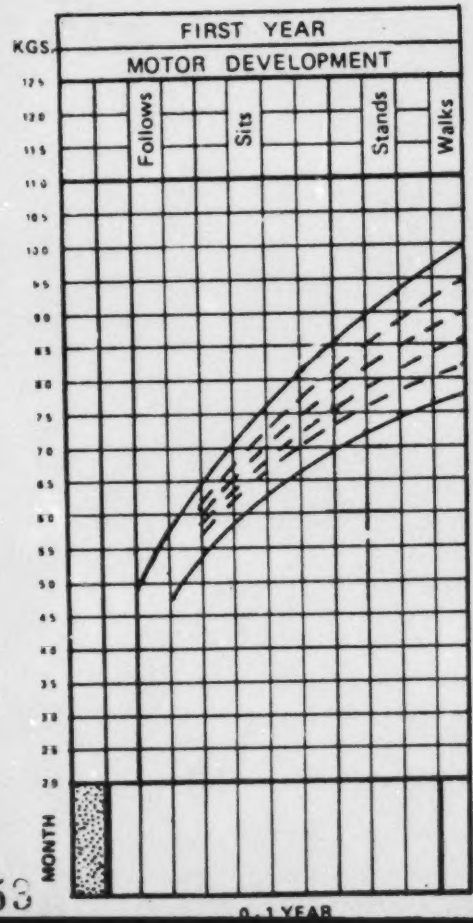
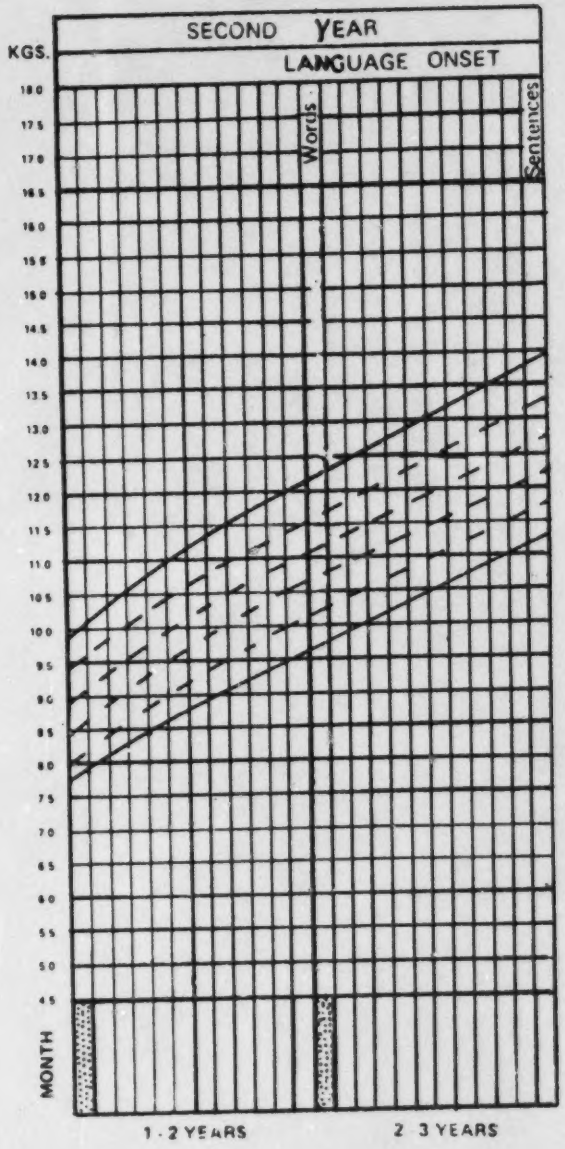
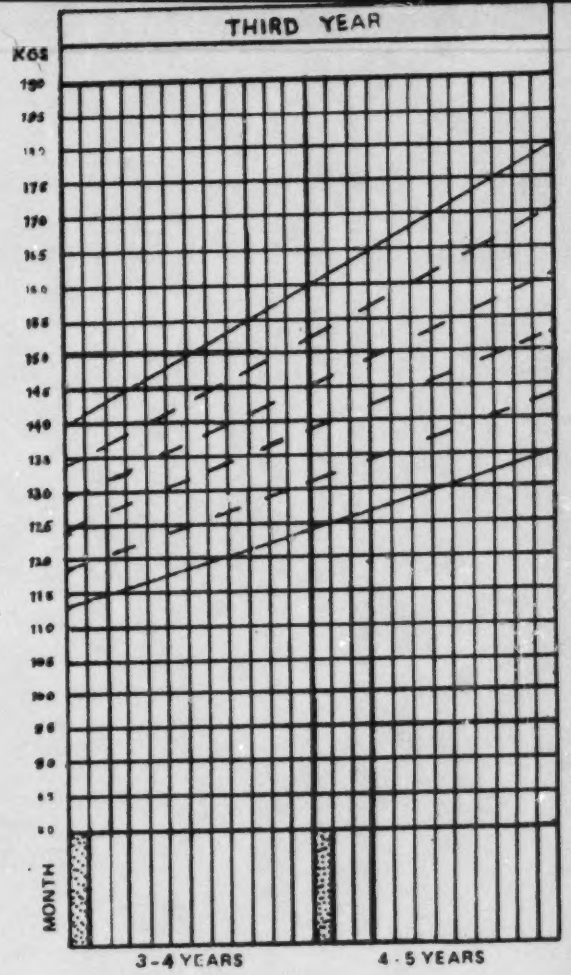


FIGURE 3

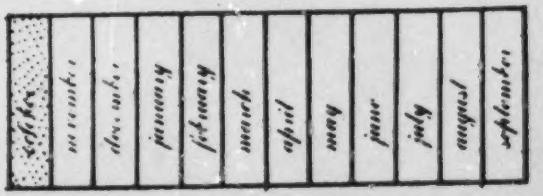


UPPER LINE – This represents the average weight of healthy and well-fed children.

LOWER LINE – The weight of children should be above this line. A steady upward progress of the weight record is more important than its position.



INSTRUCTIONS TO NURSE OR CLERK FOR COMPLETING CHART – Find out the month of birth of the child and fill this into all the black edged spaces, then fill in the other months. Also mark off the years as shown.



When the child comes for weighing make a large dot in that month's column against the weight. Connect this with the last dot.

this problem in mind; namely, to communicate essential concepts, such as the "normal range" of a child's growth and development, without resorting to reading. The mother is asked to concentrate only on where the plot marks fall, with the implication being that the child is developing normally as long as the key indicators are clearly within the lines demarcating the "road." Some health clinics have also found some success in using pictorial representations of drug dosages and schedules to overcome the illiterate's propensity to forget the details of orally-transmitted instructions.

Inability to read the record card and other printed health materials, nevertheless, erodes the quality of life of many families in other ways. Illiterate mothers commonly bring the wrong record card to the clinic, leaving no alternative but to return hometo fetch the correct one. This might ordinarily be a minor aggravation except for the fact that many women must walk ten or more miles to the clinics. Also, because illiterate mothers are apt to miss crucial innoculation dates, their children run the risk of contracting diseases which they could have prevented. In addition inability to read procedures printed on product containers such as those for mixing infant formula, for example, may have consequences as harmful to the health of the child as those of the diseases themselves.

Conclusion

The role of literacy and numeracy has been assessed in a broad cross-section of both work and other development settings. What has been learned in The Gambia can be related to the specific literacy model outlined in earlier chapters. In keeping with the first of those precepts, a work setting or other context with a delimited scope of activity was taken as the starting point in each of the cases. Informal sector enterprises comprised the bulk of these settings, although formal sector firms and development programs and services were represented as well. The focus of inquiry was the range of tasks typically performed in these situations and their relationship, if any, to literacy or numeracy. Far from implicitly assuming the skill requirements involved in the performance of tasks, an attempt was made to diagnose exactly how literacy is implicated in each of the sample settings.

Two logical planning questions present themselves at this point: what difference does literacy make in the varied situations just described, and what kind of intervention would be most feasible in addressing the perceived literacy needs in these settings? In conventional literacy planning, the latter concern is usually taken up immediately because of an understandable desire to push ahead with the struggle against illiteracy. Why, planners might ask, dwell on the question of meaning when literacy deficits have apparently been identified for which remediation seems justified? As a result, they regard the former question as little more than a research exercise that need be considered only as an afterthought, if at all.

The specific literacy approach suggests that this is a mistake. Merely to identify literacy requirements in these settings is not to guarantee that training can or should be undertaken to meet them. No one would deny that beneficial effects would accrue to virtually all of the individuals in the sample from an improvement in their literacy ability. But the planner should be wary of committing scarce resources to such a goal before coming to grips with other important issues. For example, how important are the literacy requirements to the performance of the usual tasks in that setting? What literacy abilities do workers bring to bear on these requirements? And how successful are the workers in circumventing these literacy demands when they do not possess the requisite skills?

The literacy and numeracy requirements found in the settings of The Gambia were far moreuniform in terms of their importance to the activities in each context. Consider for a moment those requirements that apply just to business. At one end of the continuum are the small-volume market sellers and traditional crafts people, whose activities were waged on such a low level that only basic market mathematical skills were needed. Conceivably, some of these operations, like making change, could be done as accurately in their heads as with paper and pencil. Large-scale retailers and artisans who found it advantageous to use banking services required additional skill to fill out deposit slips, checks, and other documents. With still more intensive activities of an entrepreneurial nature, operators also had to be able to handle demanding literacy and numeracy functions involved in such things as keeping a cash book, filling out a variety of forms such as loan applications and taking stock of inventory.

Literacy demands were no less varied to job-related applications. Traditional crafts like weaving and leatherworking had few, if any, occasions where literacy or numeracy ability seemed imperative to job performance. The ability to take measurements with a tape and perhaps to read a cross-sectional diagram or a blueprint was required in cabinet-making, carpentry, and tailoring. Skill in using intricate measurement instruments such as calipers, micrometers, feeler gauges, and various electrical testers, as well as in making mathematical calculations, was necessary in highly technological trades, including machine tool operation, automotive mechanics, and refrigeration and electronic repair. Several occupations, technical and otherwise, also called for sufficient literacy ability to look up names and numbers of spare parts in manuals or recipes in cookbooks, to write out menus, and sometimes to extract technical information from trade publications.

The literacy abilities of the individuals who engaged in these activities frequently fell short of the levels required to perform essential job tasks. This was true whether the activities were in the informal sector, formal sector, or development programs and regardless of the technical difficulty of the tasks. However, literacy abilities were not necessarily inadequate for every task in different activities. Indeed, the question of literacy ability is far more complex than what is implied by simple classification of individuals as "literate" or "illiterate."

There is a tendency to assume that individuals who cannot read and write English (or any other national language) to a reasonable level of proficiency are incapable of accomplishing any literacy task of significance. Even the subjects in this sample proved susceptible to this bias. When questioned about their literacy ability, many supposed themselves to be completely illiterate. Yet further probing often revealed increments of skills that were overlooked. These gradations of literacy and numeracy skills are displayed in Table 2.

Relatively few subjects could be considered genuinely illiterate if skills lower than those measured by standard ability tests are recognized. This is not a trivial distinction. These partial literacy and numeracy skills sometimes determine the difference between competence and incompetence on the job. For example, a number of operators could

Table 2

Literacy/Numeracy Skills of Subjects

SUBJECT	No observable or very limited numeracy or literacy ability	Can recognize numbers	Can write numbers	Can recognize some words in local language written with Arabic script (if Muslim)	Can recognize some words in English	Can write some words in local language using Arabic script (if Muslim)	Can write some words in English or local language using Roman script	Can read the Quran (if Muslim)	Can read simple familiar prose in English or local language	Can do simple arithmetic calculations on paper	Can write simple prose--business records, forms, spare parts orders, etc.	Can read to extract information from an unfamiliar text	Can write more difficult, connected prose--letters, reports, etc.
Urban Informal Sector													
Blacksmith	X												
Building Supplies Retailer/ Petrol Station Dealer	X												
Butcher		X	X		X		X		X	X	X		
Carpenter I		X											
Carpenter II		X											
Cloth Retailer I (market stall)		X	X		X		X		X	X			
Cloth Retailer II (small shop)		X		X									
Fish/Lumber Wholesaler		X											
Fish Seller (low volume)	X												
Mechanic	X												
Money Changer		X	X	X		X		X					
Radio Repairman I		X	X		X								
Radio Repairman II		X											
Radio Repair Apprentice		X	X		X		X		X	X	X		
Refrigeration Repairman I		X	X		X		X		X	X	X	X	X
Refrigeration Repairman II		X	X		X		X		X	X	X		
Refrigeration Repair Apprentice I		X	X		X		X		X	X		X	
Apprentice II		X	X		X					X			
Scribe		X	X		X		X		X	X	X	X	X
Sundry Goods Retailer I (market stall)		X	X	X		X		X					
Sundry Goods Retailer I (small shop)		X	X	X		X		X		X			
Sundry Goods Retailer II (small shop)		X	X	X		X		X					
Tailor		X	X					X					
Tie-Dyers	X												
Vegetable Seller I (low volume)	X												
Vegetable Seller II (low volume)	X												
Vegetable Seller III (high volume)		X	X		X		X		X				
Vegetable Seller IV (high volume)				X				X					
Vegetable Seller V (high volume)		X	X	X		X		X		X			

Table 2

Literacy/Numeracy Skills of Subjects

SUBJECT	No observable or very limited numeracy or literacy ability	Can recognize numbers	Can write numbers	Can recognize some words in local language written with Arabic script (if Muslim)	Can recognize some words in English	Can write some words in local language using Arabic script (if Muslim)	Can write some words in English or local language using Roman script	Can read the Quran (if Muslim)	Can read simple familiar prose in English or local language	Can do simple arithmetic calculations on paper	Can write simple prose--business records, forms, spare parts orders, etc.	Can read to extract information from an unfamiliar text	Can write more difficult, connected prose--letters, reports, etc.
Urban Formal Sector													
Machinist--Ship Repair		X	X		X		X		X	X	X	X	X
Public Works Dept: Carpenter		X											
Machinist		X	X										
Mechanic		X	X		X		X		X	X	X	X	X
Mechanic Apprentice		X	X		X		X		X	X	X	X	X
Tourist Hotel: Cook		X			X								
Lifeguard		X	X	X	X	X	X	X	X				
Bellboy	X												
Government Office: Clerk/typist												X	X
Messenger	X												
Rural Sector													
Leather Worker	X												
Peanut Farmers	X												
Weavers	X												

recognize numbers well enough to perform tasks such as reading tape measures or electrical testers, looking up money exchange rates in a handy reckoner, or verifying the accuracy of figures on a personal check or deposit slip. Some individuals could sign their names, and some could write numbers well enough to fill in checks and deposit slips or record garment measurements (tailoring) and furniture dimensions (carpentry). Still others could keep rudimentary records of transactions and write messages, letters, and receipts in their native languages of Wolof, Fula, or Mandinka using Arabic script. The hotel lifeguard even distinguished himself through his innovative use of Arabic script within a confined job context. The sample is replete with other examples of workers who have squeezed what limited skills they have for every possible benefit.

Individual abilities, however, did not always measure up to the implied requirements of the activities. When they did not, an apparent literacy gap was created with implications for job performance. The word "apparent" deserves emphasis here since, again, the reality was different from what first met the eye. Not every perceived literacy deficit disrupted or diminished job performance as might be expected. On the contrary, illiterate subjects often avoided any disabling consequences to their work by regularly circumventing many of the required literacy and numeracy tasks.

Circumventions were manifested in ways that ranged from the predictable to the ingenious. The most common circumvention of all was to rely on other literate individuals for assistance. Subjects would call on formally educated sons and daughters since they were considered trustworthy. In banking transactions, the literacy ability of bank tellers was often tapped to fill out checks and deposit and withdrawal slips or simply to verify the figures on these documents. Free help from clerks in government offices as well as paid help from public scribes was often sought in filling out tax, customs declaration, and import licensing forms. Scribes were also engaged to write personal and business letters.

Some subjects employed techniques besides reliance on others to circumvent literacy requirements, especially in the domain of job-related

literacy tasks. Table 3 lists some of the technical literacy and numeracy requirements of different activities and the ways workers sometimes circumvented these requirements. Even this incomplete picture conveys the resourcefulness of many Gambians in preventing incapacitation by illiteracy. Some artisans were able to estimate measurements and match up replacement parts so that automobiles, radios, and refrigerators could be repaired. Some tailors and carpenters could determine intuitively the correct amounts of fabric and lumber to enable the right size shirt to be sewn or a chest of drawers to be built according to plan. And some business operators could arrive at reasonably accurate prices for their commodities through pricing techniques based on simple counting.

What remains after these circumventions are subtracted out is a set of genuine, as opposed to apparent, literacy gaps. These actual literacy gaps suggest possible entry points for literacy interventions. Actual literacy gaps are both numerous and varied. They include inability to compute accurate unit prices and costs of raw material and labor; difficulty in completing bank documents and other official forms; inability to keep business records; and inability of many artisans to use precise measurement instruments, to handle spare parts by names and numbers, and to learn essential technical knowledge from trade publications.

Identification of literacy gaps and circumventions helps the planner address the larger question of what differences literacy makes in these settings. One can point to several literacy gaps among the cases analyzed in this study that epitomize the contributions literacy made to job tasks. For example, inability to keep records clearly seems to have retarded the businesses of entrepreneurs like Binta and Momodou. Likewise, small retailers like Salimatu and Fatou are prime examples of business operators whose lack of facility in market math is implicated in low incomes. The impaired ability of skilled artisans like Kemo and the auto mechanics to execute specific tasks such as measuring or ordering spare parts represents a somewhat less crucial literacy gap because they were able to circumvent the impairment successfully. Perhaps the least difference literacy made was in jobs with no literacy requirements, such as the hotel lifeguard, and in informal sector apprenticeships, such as Omar's refrigeration trade (where the practical training methods make little or no reference to printed

Table 3

Literacy/Numeracy Requirements and Circumventions

WORKER	LITERACY/NUMERACY REQUIREMENT	POSSESSES ABILITY?	CIRCUMVENTION USED
Tailor	1. Read measuring tape	Yes	Not necessary
	2. Write measurements on paper	Yes	Sometimes relies on memory
	3. Calculate quantities of material needed for multiple items based on one set of dimensions	No	Estimated from experience
Radio Repairer	1. Read numbers and letters to identify electrical components	No	Visually matches components by size, shape, and color
	2. Read numbers on electrical tester	No	Uses a simple on-off light circuit to test components rather than the tester device. Other repairers note position of pointer on tester.
	3. Read and write names and numbers of spare parts	No	Brings part to electrical parts shop to be matched up
Employed Mechanic--Government Workshop	1. Read numbers on measurement instruments--e.g. calipers micrometer, feeler gauge --when taking critical measurements	No	Employs crude improvised measurement techniques: e.g. uses a razor blade instead of a feeler gauge to adjust valve clearances
	2. Read names and numbers of spare parts on order invoice	No	Relies on others who possess skill
	3. Read trade manual to learn specific repair procedures and technical specifications (spark plug and points gap, valve clearances, etc.)	No	Relies on others or done from experience
	4. Read books or materials on motor mechanics to acquire general knowledge	No	
Self-Employed Wayside Mechanic	1. Read and write names and numbers of spare parts or vehicle model number	No	Brings part or entire vehicle to parts shop for assistance in proper part identification
	2. Read numbers on measurements instruments or measure critical dimensions without instruments	No	Employs crude improvised measurements techniques: e.g. uses a strand from a broom to ensure equivalent cylinder diameters
Carpenter	1. Read measuring tape	Yes	Not necessary
	2. Calculate amount of board-feet of lumber needed for a particular job.	No	Estimated from experience
	3. Read a blueprint or cross-sectional diagram	No	

WORKER	LITERACY/NUMERACY REQUIREMENT	POSSESSES ABILITY?	CIRCUMVENTION USED
Fish-Lumber Trader	1. Calculate the total selling price of cases of shark meat to be sold	No	Counts out fish individually until a number is reached upon which the price is agreed (1 case = 42 fish)
Sundry Goods Retailer I (Market Stall)	1. Calculate retail prices for a bulk quantity of a commodity	No	Sells the commodity in convenient "market groups". For example, a market group of onions is determined by finding a combination of 16 onions that weigh a fixed amount (for which he knows the prevailing price - say, 1 Kilo = D2) and then separating the onions into groups of 4, which are sold for 50B
Sundry Goods Retailer II (Small Shop)	1. Calculate unit prices of a bulk quantity of a commodity	Not Completely	Uses an electronic calculator for all paper and pencil math operations

materials.) All of these examples encompass the issues which must be considered in determining feasibility of an intervention. This preliminary prioritization provides useful starting points.

FEASIBILITY OF LITERACY TRAINING

The goal of literacy planners is to establish programs that effectively address the needs of a target population. This note has suggested a path to this end which helps insure effectiveness of the programs. The first part of this suggested process --- an answer to the question of what difference literacy makes --- has been described in Chapter 4 with the analysis of literacy requirements, abilities, and circumventions in settings in The Gambia. The second part of the process is to determine whether literacy gaps are feasibly remedied.

In the present context, feasibility refers to whether or not a particular literacy activity will succeed in closing a perceived literacy gap for a given group. Once the question of feasibility is operationalized, a host of logistical and financial issues are raised. Availability of teachers, materials, classrooms, financial resources, and institutional backstopping as well as questions about suitability of instructional approaches are some of the major considerations that surface when determining the feasibility of an intervention.

Despite their importance to the literacy planning exercise, factors such as the above are not considered here. They have been dealt with extensively in the body of literature treating adult literacy, and planners are likely to be aware of the organizational and logistical issues that present themselves locally.

The specific literacy exercise has the planner consider three things before proceeding to other steps in a planning sequence. These consist of the following:

1. identification of "entry points" for literacy training
2. determination of the purposes for improved literacy skills
3. evaluation of the above two considerations in light of what is likely to be accomplished through short-term literacy training.

Entry Points

A look at the data from The Gambia shows a number of cases where a literacy activity might prove beneficial. However, whether an improvement

in literacy skills makes a difference in a particular situation is difficult to say; also literacy training does not always provide these literacy skills. Before the planner considers logistical and financial factors, the specific literacy exercise has the planner look at the situation to determine whether a suitable entry point for literacy training exists.

An entry point is a situation where individuals, as a result of environmental changes, are experiencing increased incentive to become literate. The motivation here could be produced by a variety of social and economic causes such as changes in technology, increased competition, or awareness of being exploited. In the cases encountered in The Gambia where an improvement in literacy skills would seem likely to make an important difference to the work performed, the literacy gap inflicted a heavy cost on the individual or on the enterprise in which each individual worked. Where a planner confronts a situation in which the costs of illiteracy appear to be rising, an entry point for literacy training has been located. Determining an entry point is essential before turning to other important considerations such as available funds, teachers, and curriculum.

A variety of entry points was discovered in The Gambia. These included an increasing awareness of illiterate farmers of their susceptibility to being cheated when marketing their crops, an increased inability of illiterate mechanics to avail themselves of opportunities for training and job advancement, and a growing understanding by illiterate businesspeople that their illiteracy stands in the way of receiving credit. Many entry points can be traced to lack of numeracy, rather than literacy, ability. While many informal sector operators can get by with minimal literacy ability, few can regularly circumvent or ignore the numeracy requirements of their jobs without adversely affecting income and productivity. The planner is thus advised to look first for entry points associated with deficiency in manipulation of numbers.

Entry points such as the ones just described are more situational than personal. They are likely to be discovered by the planner through the kind of analysis that has been suggested throughout this note rather than through a less reliable survey of personal motivation where illiterates invariably express interest in taking part in a literacy activity.

Purposes for Improved Literacy

Locating entry points still does not solve the matter of feasibility of literacy training, especially when the planner is dealing with a wider population than a preselected group. There may be several groups with several different entry points, but the resources may not exist to mount separate literacy activities for each situation. In this case, the planner may simply decide to address only those groups which seem most likely to benefit from literacy training. Another option, however, is to find a common factor among these situations which would permit a single literacy activity to be relevant to all situations. Such a generic literacy acitivity, whenever possible, is likely to be more feasible than a series of interventions for individual groups.

One way for the planner to judge whether there is commonality across varied situations and to discover common entry points is to identify the general purpose for making an improvement in literacy skills. Common characteristics even among seemingly dissimilar situations often show up in examining these purposes. In the cases studies in The Gambia, all possible interventions fall into three general categories of purposes of literacy, each suggesting different content for a training activity. These consist of: literacy for earning an income, literacy for doing job tasks, and literacy for learning job skills and technical knowledge.

Literacy to Earn

"Literacy to earn" is the catch-phrase for a collection of reading, writing, and arithmetic skills needed to conduct one's personal or professional business. Lack of ability in handling the business tasks related to work activities composed the bulk of the literacy gaps in the sample. Individuals in virtually every trade or commercial enterprise experienced some degree of difficulty with a business-related function, ranging from errors in making change to inability to keep written accounts.

The cost associated with these business literacy gaps were also felt more acutely by the operators than were other kinds of literacy gaps; hence, an entry point was apparent. Although mental arithmetic served some operators reasonably well at times, low-volume retailers like Fatou, Salimata, and small-scale tradespeople lost undetermined amounts of income every day because of small errors in making change, not knowing unit prices,

and not being able to keep track of labor and raw material costs. Peanut farmers were vulnerable to larger losses since the selling of peanuts involved the whole year's work. Some retailers could not avail themselves of large-volume orders dispensed through government-issued purchase orders because of their inability to read the provisions of the contract. A shopkeeper like Binta and an entrepreneurial artisan like Momodou who wanted to expand their businesses were denied loans to do so because they did not keep business records.

Even the circumventions employed by some subjects were not immune to costs. Several incidences of cheating occurred with subjects who had counted on literate individuals to process checks, deposit slips, and import declaration forms honestly. Fortunately, some cases of cheating were exposed because the individuals knew enough arithmetic to spot the discrepancies. But these same individuals might be victimized in the future. Aside from the threat of being cheated, there is an underlying psychological problem associated with reliance on the goodwill of literate individuals. Several subjects expressed feelings of powerlessness and embarrassment over their almost total dependence on relative strangers in matters so intensely personal.

The costs associated with these literacy gaps and the likely benefits of improved skills in "literacy to earn" suggest not just possible entry points but the content of training activities as well. One activity might be directed exclusively at market sellers, hawkers, and small-scale craftspersons which would focus primarily on numeracy: recognizing numbers, doing simple market mathematics, reading and writing numbers well enough to handle bank documents, and calculating labor and raw material costs. A second level might appeal to large-scale retailers and wholesalers and to artisans who interact with modern sector institutions. Here the intention would be to equip operators with the literacy skills needed to deal with written purchase orders, customs declaration forms, and import licensing forms. This activity might naturally lead to the next step of learning the literacy skills involved in maintaining a simple cashbook. Those who are proficient in Arabic script could be assisted in adapting it for writing entries in the cashbook rather than having to be taught in English. Organizations in developing countries that provide business advisory services might be an appropriate sponsor for such activities.

Training in "literacy to earn" meets two important criteria of feasibility, especially in the case of the informal sector. First, deficits in "literacy to earn" are clearly associated with recognizable costs to business operators. Second, the application of business-related literacy skills to many different work settings suggests a common entry point for an activity that serves a diverse set of clients. Therefore, the potential of an intervention designed to close gaps in "literacy to earn" appears high.

Literacy to Do

"Literacy to do" refers to the literacy and numeracy tasks required to perform the actual jobs themselves. In most instances, literacy skills for doing something find application within a skilled trade rather than a purely commercial venture. Despite the difference in purposes, literacy and numeracy abilities were found to be deployed just as extensively in relation to skilled tasks as to business tasks.

Numerous gaps were discovered in the ability of skilled workers in The Gambia to execute tasks which required literacy or numeracy. Automobile mechanics, both in the Mechanical Workshop of the Public Works Department and in private business, radio repairers and some refrigeration repairers could not always properly use number-calibrated measurement instruments such as feeler gauges, micrometers, calipers, electrical testers, and other instruments which were integral to their trade. Although the two carpenters and the tailor could read tape measures, they had no apparent paper and pencil ability to make calculations relative to amounts of lumber needed for a piece of furniture or of fabric needed for a garment. Moreover, the carpenters were not able to read cross-sectional furniture diagrams, and the radio repairers could not read wiring diagrams. Repairers were found in all trades who could not read names and order numbers of parts in spare parts catalogs nor, in the case of the Mechanical Workshop, fill out requisition forms. In another setting, many mothers using the services of public health clinics could not completely understand the health data recorded on their child's health card.

The costs of these literacy gaps were often lessened by an array of circumventions. The mechanics' use of improvised measuring instruments produced measurements accurate enough to avoid visible impairment of the

equipment. Radio repairers' techniques of noting the angle of the needle on the electrical tester rather than the number to which it pointed apparently allowed them to determine whether a component needed replacement. The ability of tailors and carpenters to estimate intuitively, or to calculate mentally, how much fabric and lumber were needed for particular jobs approximated the accuracy of paper and pencil arithmetic. The illiterate wayside repairers' practice of carrying a part to the parts supply shop for identification or, in the case of the Mechanical Workshop, relying on literate individuals to write up order forms afforded a relatively easy and reliable way to obtain spare parts. Some illiterate radio repairers achieved this same end by matching components by color, shape, and size.

These circumventions suggest that the potential costs of gaps in "literacy for doing" have been minimized. Yet artisans often do not deny that they are penalized in small ways by specific instances of illiteracy. Some express embarrassment over having to bring parts to the shop for identification. Carrying a small part to the parts shop is a minor inconvenience, but transporting a large truck or auto part from far away is a somewhat greater undertaking. Not being able to interpret blueprints or wiring diagrams can and does lead to mistakes and delays until the proper specifications can be figured out through trial and error.

Unlike literacy for earning, the cost of inadequate literacy for performing job tasks may be borne by an institution as well as by individuals. For example, productivity suffers when mechanics in the Mechanical Workshop rely on other literate individuals to assume their literacy responsibilities. Literate workers and managers are pulled away from their own duties elsewhere to cover for illiterate individuals. This carries consequences for the efficiency and quality of work in the Workshop. Workers with limited literacy ability must be confined to jobs where literacy skills are not critical. Under such conditions, the motivation for addressing the literacy gaps may reside more with the institution than with the illiterate individual.

The literacy gaps in this domain suggest three specific kinds of training activities that deserve immediate attention. One might focus exclusively on the number recognition skills involved in measurement,

including the use of measurement instruments. A second activity might involve assisting artisans in acquiring the word and number recognition skills needed to look up parts in catalogs and write them down on paper or on an appropriate form. The third activity might deal with the literacy skills associated with reading blueprints, wiring diagrams, and cross-sectional diagrams.

Training to improve literacy skills for performing job tasks only in part meets the test of feasibility. As in the case of "literacy to earn," deficits of "literacy to do" impose costs on workers and institutions, although not to the same degree. Unlike "literacy to earn," however, gaps in literacy for this purpose do not lend themselves as easily to generic training activities relevant to a diverse clientele. This is clearly evident in the application of measurement skills to different work settings.

Many commonalities can be found among measurement operations and instruments, especially those using metric scales. But beyond the superficial similarities, the purposes of the measurements are different. This means the concept of measurement would need to be kept simple and general if artisans from several trades participate together in a training program. However, in generally appealing to the commonalities of trades, the distinct applications, which are the main source of motivation for many potential participants, are likely to be lost. Thus, training for literacy to do a job may have to be organized separately around the specifics of each work activity.

Literacy to Learn

All the high level literacy and numeracy skills needed for acquiring knowledge related to a work activity fall under the heading of "literacy to learn." These skills go beyond ability to read isolated words or even simple, familiar prose to include the ability to read and write difficult, connected prose on unfamiliar topics. In terms of mathematical ability, literacy for learning also requires at least the ability to do basic arithmetic operations and perhaps more advanced skills as well.

As might be guessed, the gaps in literacy skills for acquiring technical knowledge were widespread among the informal sector operators.

Except for Omar, the refrigeration repairman, a few formally-educated informal sector apprentices, and 10 mechanics in the Mechanical Workshop, no one in the sample could read or do math well enough to understand a standard textbook or trade manual in his or her field. Most operators, in fact, did not even possess, or have access to, printed trade materials.

These gaps in literacy for learning are no less prone to circumventions than gaps in other classes of literacy function. The most common way to circumvent the need for literacy in learning a technical craft is to train apprentices through a pedagogy that does not rely on literacy. Master artisans both in technical and non-technical trades use a "hands-on" approach to training regardless of their own personal literacy abilities. Omar, for example, although formally-educated and literate to a fairly high standard, prefers this learn-while-doing pedagogy in training his apprentices. He acknowledges that his reading and mathematic abilities were important in his own training experiences, but he insists that "you just wouldn't get the time for reading" in his present business. This attitude is typical of other master artisans in the informal sector of The Gambia.

There is reason to think that this learning while doing is not adequate to acquire the extensive job knowledge of highly technical trades. Some illiterate auto mechanics and radio and refrigeration repairers in The Gambia found it difficult to explain important theoretical principles related to their trades. Kemo, the radio repairer, could not accurately define basic electronic concepts that one would expect a successful practitioner of his craft to understand. Apprentices in refrigeration repair had equal trouble explaining technical terms of that trade. When asked how an internal combustion engine works, a wayside mechanic replied only that "it is a lot of components working together." Assuming that the inability to verbalize technical concepts is indicative of what is actually known, one must conclude that illiterate Gambian artisans appear to possess little more than a superficial grasp of how the equipment they repair really works.

One can argue about the extent to which any deficiency in technical knowledge accounts for lower performance on the job. This is a matter for a more focused study. However, instructors of vocational training institutions

and supervisors in the Mechanical Workshop in The Gambia believe that the lack of such technical knowledge does affect aspects of the work like fault diagnosis, shop safety, cleanliness, and compliance with standard repair procedures. Illiterate auto mechanics and repairers take a long time to diagnose obscure faults because of their reliance on a trial and error, rather than a systematic elimination of malfunctioning components. Their use of unorthodox repair procedures sometimes fails to meet acceptable standards of trade practice, causing damage to the equipment that may not show up until much later. Illiterates also are often not as aware of safety procedures when working with heavy or dangerous equipment, While certainly not conclusive evidence, these and other possible effects of deficits in knowledge suggest a strong relationship between the ability to use literacy as a tool for learning and job performance.

Costs are paid by artisans who possess less than adequate literacy skills for learning technical knowledge. This implies existence of entry points for addressing these literacy gaps. The problem however, is that the deficits might be so large as to be insurmountable for all but a very few. In such cases, locating what might be a good entry point is not enough to guarantee the feasibility of a literacy activity.

The low feasibility of entry points in "literacy to learn" is illustrated in cases when training opportunities become available. Training courses for a particular trade, especially when instituted by formal sector establishments, often bring with them, directly or indirectly, new literacy requirements for entry into, or advancement within, the trade. Entry points for literacy training emanate out of the desire by the illiterate artisan to compete with new school-educated entrants to the trade or to qualify for promotion or pay raises based on participation in in-service training programs. Unfortunately, such entry points are difficult to take advantage of because the literacy ability of the prospective learner cannot easily be brought up to the level required for participation in the training program.

Calling upon literacy as a tool for learning is without question a great advantage to almost everyone. Literacy training aimed at the relatively high level of skills inherent in literacy for learning will be most feasible among those people who already are literate from attending formal school or

have acquired the specific literacy skills to perform job tasks or run their businesses. Whatever the advantage of literacy for learning, however, the planner should not forget that many people, especially those operating in the informal sector, have managed to learn a great deal of what is needed to get along on the job by doing the job. In considering any training program to assist informal sector artisans, the planner should convey technical knowledge and skills in ways that do not rely initially on literacy.

Limits of Literacy Training

If a planner has identified a suitable entry point for training and has a clear idea of the purpose for which an improvement in literacy skills would be used, the planner must determine whether the closing of a literacy gap would be accomplished during the course of a literacy activity.

As was mentioned in Chapter 2, literacy activities usually involve instruction lasting between 300 and 700 hours. Increasingly, however, literacy activities are being conducted as a component of a larger development project and have a duration of less than 300 hours. Given that experience has shown that the duration of the average literacy program has not been long enough to insure independent use and retention of skills, the planner must be circumspect in expectations of what might be accomplished by literacy training of a shorter duration. Much depends upon existing skills of participants and on the opportunities they have to practice skills after training is completed. Much also depends on the choice of language for literacy. If the entry point for literacy training requires the illiterate to learn a second language (and sometimes for economic reasons, this will be the illiterate's first choice), the literacy task is made doubly difficult.

The opportunity costs associated with offering literacy training, as opposed to some other input, should also be considered. Many assume that the problems of subsistence level incomes, small scale business, and inefficiency in the informal sector will be solved after infusion of literacy training. This is not necessarily true. A careful analysis of the exact nature of the problems within a given work setting may indicate the need

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for capital, managerial assistance, or specific vocational training instead of literacy. The belief that literacy training will indirectly benefit the recipient audience in some way may, in effect, divert both resources and attention from the real source of difficulities.

To give the planner a more detailed idea of the outcomes that can be expected from a short-duration literacy activity is not possible. What can be done, however, is to urge that more realism be brought to this consideration than has been the case in the past.

Designing the Literacy Intervention

As stated earlier, this guide does not attempt to prescribe a specific program for training job-related literacy and numeracy skills. The planner is usually in the best position to make these decisions once the planning exercise has been followed. However, some general observations can be drawn from this approach that have implications for the design of the intervention.

Given the likelihood of a literacy activity of short duration, training for the purposes of "literacy to earn" and "literacy to do" are preferred. Also, the desire to have literacy ability retained calls for a focus on skills that are likely to be practiced regularly in day-to-day activities. The numeracy/literacy skills involved in commercial transactions in the informal sector and in the reading of number-calibrated measurement devices and trade manuals are clearly feasible entry points in the context of a country like The Gambia. The following describes what <u>one</u> possible training activity based on the specific literacy model might look like.

A training activity to train the numeracy/literacy skills needed for commercial success would be feasible if it included a variety of small-scale operators and artisans. The program might best be undertaken by an organization or government agency that provided financial or managerial assistance to informal sector enterprises. Such services, which are becoming increasingly common in developing countries, have established networks that would help to identify potential participants for the training activity.

Since entry points are situation specific, the training activity would probably be most effective if implemented on a community rather than a

regional or nationwide basis. A logical group to start with might be business operators who have applied for a loan from a bank or a business assistance service. Presumably, these individuals would share the motivation of wanting to meet the formal requirements of a loan application. Another way to begin might be to conduct a survey of business establishments in a target community to identify individuals who have suffered personally from their inadequate numeracy ability. Victims of dishonesty in financial transactions or of poor market mathematics would seem likely to have the desire to avoid similar occurrences in the future.

A generic training activity might be designed to address skills common to diverse job settings at a similar level of proficiency. For example, individuals who possess minimal increments of numeracy such as the ability to recognize or write numbers might be grouped together and given instruction in basic arithmetic operations. The training would be applied to such concrete tasks as making change, calculating unit prices, and filling out checks and bank deposit slips. Those who can already perform paper and pencil arithmetic could be given training in how to keep the necessary financial records of their businesses in order to qualify for a loan. Training would continue only long enough to insure that the skills could be performed in the actual work situation.

Conclusion

The steps outlined above were designed to help the planner draw a conclusion about the feasibility of a literacy activity in a particular situation. The considerations recommended are necessary but by no means sufficient. A host of organizational, instructional, and logistical issues must be taken into account as well. However, the type of analysis suggested in the preceding pages is indispensable before launching into the organizational planning and instructional design for a literacy activity if programs are to be effective and resources well used.

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